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=> d que
L3       469000 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (M(L)O(L)P)/ELS
L4         9658 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (M(L)X)/ELS(L)2/E
                LC.SUB
L5        11919 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L3 AND LI/ELS
L6          431 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L5 AND V/ELS
L7          310 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L6 AND O4P
L8        18706 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L3 AND O4P
L9         6748 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L8 AND (V OR CR
                OR CU OR ZN OR IN OR SN OR MO OR TI)/ELS
L10       13664 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L8 AND (V OR CR
                OR CU OR ZN OR IN OR SN OR MO OR TI OR ZR OR HF OR NB OR
                TA OR W OR MN OR TC OR RE OR FE OR RU OR OS OR CO OR RH OR
                IR OR AG OR AU OR CD OR HG OR AL OR GA OR GE OR PB)/ELS
L11        2880 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L10 AND LI/ELS
L12       10784 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L10 NOT L11
L16        1152 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L11 AND FE/ELS
L17        1315 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L12 AND FE/ELS
L18          57 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L6 AND FE/ELS
L19         685 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L9 AND FE/ELS
L20          39 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L18 AND L7
L22      777192 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L4
L23          41 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L20
L24         717 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L16
L25        1989 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L17
L26          62 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L18
L27         386 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19
L28         205 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L22 AND (L23 OR
                L24 OR L25 OR L26 OR L27)
L30             QUE  SPE=ON  ABB=ON  PLU=ON  CATHODE# OR POSITIVE ELECTRO
                DE# OR POSITIVEELECTRODE#
L31          59 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L28 AND L30
L32          28 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND PROC/RL
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L33             QUE  SPE=ON  ABB=ON  PLU=ON  (C OR CARBON)(3A)DEPOSIT?
L34           0 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND L33
L35           3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L23 AND L22
L43          59 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 OR L32 OR L34
                OR L35
L44          73 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  ("HATTA, NAOKI"/AU
                 OR "INABA, TOSHIKAZU"/AU OR "UCHIYAMA, IZUMI"/AU)
L45           1 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L44 AND L28
L46          19 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L44 AND ELECTROCHE
                M?/SC,SX
L47          19 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L45 OR L46
L48           3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L47 AND (L22 OR
                L23 OR L24 OR L25 OR L26 OR L27)
L49           1 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L47 AND L33
L50          12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L30 AND L47
L51          12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L48 OR L49 OR
                L50)
L52          58 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L43 NOT L51
L53          21 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 AND CONDUCT?
L54          58 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 OR L53


=> fil hcap
FILE 'HCAPLUS' ENTERED AT 09:07:38 ON 24 JAN 2011
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REVISED CLASS FIELDS (/NCL) LAST RELOADED:  Oct 2010
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE:  Oct 2010

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reclassification data for the fourth quarter of 2010.

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=> d l54 1-58 ibib ed abs hitstr hitind

L54  ANSWER 1 OF 58  HCAPLUS  COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER:        2010:1319997  HCAPLUS  Full-text
DOCUMENT NUMBER:         153:623425
TITLE:                   Method for preparing nano-sized lithium metal
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phosphate LiMPO4/C
INVENTOR(S): Zhao, Jinxin
PATENT ASSIGNEE(S): IRICO Group Corp., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 7pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101867042	A	20101020	CN 2010-10210203	20100628
PRIORITY APPLN. INFO.:			CN 2010-10210203	20100628

ED Entered STN: 25 Oct 2010

AB The title method comprises: (1) dissolving soluble lithium compound, soluble transition metal compound and phosphoric acid in deionized water at an atomic ratio of Li:M:P of 1:1:1 to prepare uniform-phase solution, evenly mixing, and adding soluble carbon source solution, (2) regulating pH to 6-8.5, (3) putting in an oil bath kettle to heat at 70-150°C to prepare suspension with precipitate, (4) adding deionized water to regulate the concentration of the suspension, and spray-drying, wherein the solid content of the suspension for spray drying is 5-20%, and (5) sintering the dried product in a sintering furnace, cooling, and taking out to obtain uniform spherical LiMPO4/C material with primary particles at nanometer level and secondary particles at micrometer level. The ion transport channel is effectively shortened, and through forming a uniform pyrolyzed carbon on the particle surface, the electron transport efficiency is increased. Large-power discharge is promoted, and the micrometer-level secondary particles facilitate battery coating process.

IT 331622-62-9P, Iron lithium nickel phosphate (Fe0.8LiNi0.2(PO4)) 331622-64-1P, Cobalt iron lithium phosphate (Co0.1Fe0.9Li(PO4)) 412351-36-1P, Iron lithium manganese phosphate (Fe0.9LiMn0.1(PO4)) 1171943-60-4P, Cobalt iron lithium phosphate (Co0.05Fe0.95Li(PO4))
(method for preparing nano-sized lithium metal phosphate LiMPO4/C)

RN 331622-62-9 HCAPLUS
CN Iron lithium nickel phosphate (Fe0.8LiNi0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0.2	7440-02-0
Li	1	7439-93-2
Fe	0.8	7439-89-6

RN 331622-64-1 HCAPLUS
CN Cobalt iron lithium phosphate (Co0.1Fe0.9Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.1	7440-48-4
Li	1	7439-93-2
Fe	0.9	7439-89-6

RN 412351-36-1 HCAPLUS

CN Iron lithium manganese phosphate (Fe0.9LiMn0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0.1	7439-96-5
Li	1	7439-93-2
Fe	0.9	7439-89-6

RN 1171943-60-4 HCAPLUS
CN Cobalt iron lithium phosphate (Co0.05Fe0.95Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.05	7440-48-4
Li	1	7439-93-2
Fe	0.95	7439-89-6

IT 7646-79-9, Cobalt chloride (CoCl2), reactions
7758-94-3, Ferrous chloride
(method for preparing nano-sized lithium metal phosphate LiMPO4/C)
RN 7646-79-9 HCAPLUS
CN Cobalt chloride (CoCl2) (CA INDEX NAME)

RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

IPCI H01M0004-1397 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST nanoscale lithium metal phosphate carbon prepn battery cathode
IT 331622-62-9P, Iron lithium nickel phosphate
(Fe0.8LiNi0.2(PO4)) 331622-64-1P, Cobalt iron lithium
phosphate (Co0.1Fe0.9Li(PO4)) 412351-36-1P, Iron lithium
manganese phosphate (Fe0.9LiMn0.1(PO4)) 485386-79-6P, Iron lithium
manganese phosphate (Fe0.5LiMn0.5PO4) 1171943-60-4P,
Cobalt iron lithium phosphate (Co0.05Fe0.95Li(PO4))
(method for preparing nano-sized lithium metal phosphate LiMPO4/C)
IT 50-99-7, D-Glucose, reactions 57-50-1, Sucrose, reactions 67-68-5,
Dimethyl sulfoxide, reactions 77-92-9, Citric acid, reactions
373-02-4, Nickel acetate 546-89-4, Lithium acetate 553-91-3,
Lithium oxalate 1310-65-2, Lithium hydroxide 2180-18-9, Manganese
acetate 3349-06-2, Nickel formate 5931-89-5, Cobalt acetate
7646-79-9, Cobalt chloride (CoCl2), reactions 7664-38-2,
Phosphoric acid, reactions 7720-78-7, Ferrous sulfate
7758-94-3, Ferrous chloride 7786-81-4, Nickel sulfate

7790-69-4, Lithium nitrate 9004-53-9, Dextrin 10045-89-3, Ammonium ferrous sulfate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate 25322-68-3, Polyethylene glycol
(method for preparing nano-sized lithium metal phosphate LiMPO4/C)

L54 ANSWER 2 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:1292059 HCAPLUS Full-text
DOCUMENT NUMBER: 153:585069
TITLE: Lithium battery electrode material containing composite particles of lithium iron phosphate and lithium vanadium phosphate
INVENTOR(S): Yang, Gai; Jiang, Changyin; Gao, Jian; Ying, Jierong; Li, Jianjun; He, Xiangming
PATENT ASSIGNEE(S): Tsinghua University, Peop. Rep. China; Hongfujin Precision Industry (Shenzhen) Co., Ltd.
SOURCE: Faming Zhuanli Shenqing, 32pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101859891	A	20101013	CN 2010-10191050	20100603
PRIORITY APPLN. INFO.:			CN 2010-10191050	20100603

ED Entered STN: 18 Oct 2010
AB The title electrode material contains uniformly distributed composite particles of lithium iron phosphate and lithium vanadium phosphate. Each composite particle of lithium iron phosphate and lithium vanadium phosphate comprises a lithium vanadium phosphate particle and a lithium iron phosphate particle layer on the lithium vanadium phosphate particle surface. The lithium iron phosphate particle layer comprises plural lithium iron phosphate particles.
IT 727652-58-6P, Cobalt iron lithium phosphate ((Co,Fe)Li(PO4))
727652-59-7P, Iron lithium nickel phosphate ((Fe,Ni)Li(PO4))
909247-33-2P, Iron lithium vanadium phosphate (Fe0.97LiV0.03(PO4))
(lithium battery electrode material containing composite particles of lithium iron phosphate and lithium vanadium phosphate)
RN 727652-58-6 HCAPLUS
CN Cobalt iron lithium phosphate ((Co,Fe)Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 1	7440-48-4
Li	1	7439-93-2
Fe	0 - 1	7439-89-6

RN 727652-59-7 HCAPLUS
CN Iron lithium nickel phosphate ((Fe,Ni)Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0 - 1	7440-02-0

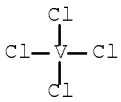
Li	1	7439-93-2
Fe	0 - 1	7439-89-6

RN 909247-33-2 HCAPLUS
CN Iron lithium vanadium phosphate (Fe0.97LiV0.03(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
V	0.03	7440-62-2
Li	1	7439-93-2
Fe	0.97	7439-89-6

IT 7447-41-8, Lithium chloride, reactions 7632-51-1 , Vanadium tetrachloride 7772-99-8, Stannous chloride, reactions
(lithium battery electrode material containing composite particles of lithium iron phosphate and lithium vanadium phosphate)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7632-51-1 HCAPLUS
CN Vanadium chloride (VCl4), (T-4)- (CA INDEX NAME)



RN 7772-99-8 HCAPLUS
CN Tin chloride (SnCl2) (CA INDEX NAME)

IPCI H01M0004-136 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery electrode material composite particle; cathode active lithium iron vanadium phosphate
IT Battery cathodes
(lithium battery electrode material containing composite particles of lithium iron phosphate and lithium vanadium phosphate)
IT 15365-14-7P, Ferrous lithium phosphate 84159-18-2P, Lithium vanadium phosphate (Li3V2(PO4)3) 727652-58-6P, Cobalt iron lithium phosphate ((Co,Fe)Li(PO4)) 727652-59-7P, Iron lithium

nickel phosphate ((Fe,Ni)Li(PO4)) 909247-33-2P, Iron lithium vanadium phosphate (Fe0.97LiV0.03(PO4))
(lithium battery electrode material containing composite particles of lithium iron phosphate and lithium vanadium phosphate)

IT 50-81-7, Ascorbic acid, reactions 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1314-62-1, Vanadium pentoxide, reactions 7447-41-8, Lithium chloride, reactions 7632-51-1, Vanadium tetrachloride 7664-38-2, Phosphoric acid, reactions 7722-76-1, Ammonium dihydrogen phosphate 7772-99-8, Stannous chloride, reactions 7783-28-0, Diammonium hydrogen phosphate 7790-69-4, Lithium nitrate 7803-55-6, Ammonium metavanadate 10377-48-7, Lithium sulfate 12036-21-4, Vanadium dioxide 16940-66-2, Sodium borohydride
(lithium battery electrode material containing composite particles of lithium iron phosphate and lithium vanadium phosphate)

L54 ANSWER 3 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:1053769 HCAPLUS Full-text
DOCUMENT NUMBER: 153:411187
TITLE: Manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material
INVENTOR(S): Gu, Yijie; Chen, Yunbo; Zhang, Zhao; Chen, Lin
PATENT ASSIGNEE(S): Jiangsu Zhongou Material Research Institute Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing, 4pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101807697	A	20100818	CN 2010-10159642	20100429
PRIORITY APPLN. INFO.:			CN 2010-10159642	20100429

ED Entered STN: 23 Aug 2010
AB This manufacturing comprises evenly mixing Li salt, Fe salt and phosphate at a Li ion:Fe ion:phosphate ion molar ratio of (0.8-1.2):(0.8-1.2):(0.8-1.2) to obtain a mixture, adding the mixture to aqueous solution containing boric acid, soluble salt and soluble orgs., evenly stirring, putting in a high-temperature furnace, heat-treating at a temperature increase speed of 1-30°/min in nonoxidative atmospheric, naturally cooling to synthesize Li ferrous phosphate powder containing C and doped ions, and finely grinding the Li ferrous phosphate powder to control particle diameter to 1-50 μm. The obtained Li ferrous phosphate has good electron conductivity
IT 1243997-17-2P
(Magnesium, cobalt, boron and fluorine doped; manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
RN 1243997-17-2 HCAPLUS
CN Cobalt iron lithium magnesium borate fluoride phosphate (Co0.01Fe0.99LiMg0.01(BO3)0.01F0.01(PO4)0.99) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	0.01	14762-94-8
O4P	0.99	14265-44-2

BO3	0.01	14213-97-9
Co	0.01	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Fe	0.99	7439-89-6

IT 1243997-14-9P
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
RN 1243997-14-9 HCAPLUS
CN Iron lithium magnesium zirconium borate fluoride phosphate (Fe0.99LiMg0.01Zr0.01(BO3)0.01F0.01(PO4)0.99) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	0.01	14762-94-8
O4P	0.99	14265-44-2
BO3	0.01	14213-97-9
Zr	0.01	7440-67-7
Mg	0.01	7439-95-4
Li	1	7439-93-2
Fe	0.99	7439-89-6

IT 7789-24-4, Lithium fluoride, uses
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

IPCI H01M0004-58 [I,A]; H01M0004-1397 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-02 [I,C]; H01M0004-1397 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium ferrous phosphate substituted structure battery cathode material
IT Secondary batteries
(lithium; manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT Battery cathodes
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT 1243997-17-2P
(Magnesium, cobalt, boron and fluorine doped; manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-16-6, Rhodium, uses 7440-32-6, Titanium, uses 7440-39-3, Barium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-67-7, Zirconium, uses
(dopant; manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)

IT 1243997-14-9P
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT 7440-62-2, Vanadium, uses 7789-24-4, Lithium fluoride, uses 10043-35-3, Boric acid (H3BO3), uses
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT 50-99-7, Glucose, uses 57-50-1, Sucrose, uses 9002-89-5, Polyvinyl alcohol
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT 516-03-0, Ferrous oxalate 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1834-30-6, Ferric acetate 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7790-69-4, Lithium nitrate 10028-22-5, Ferric sulfate 10377-48-7, Lithium sulfate 10421-48-4, Ferric nitrate
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)
IT 7440-44-0, Carbon, uses
(manufacturing of lithium ferrous phosphate with all substituted structure for lithium ion battery cathode material)

L54 ANSWER 4 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:965961 HCAPLUS Full-text
DOCUMENT NUMBER: 153:265275
TITLE: Lithium phosphate powder, its dispersion slurries, and manufacture of cathode active materials for lithium ion batteries from same slurries
INVENTOR(S): Nakano, Toyomasa; Yamamoto, Yoshiki; Saito, Mitsumasa
PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2010168230	A	20100805	JP 2009-10197	20090120
PRIORITY APPLN. INFO.:			JP 2009-10197	20090120

ED Entered STN: 05 Aug 2010
AB Lithium phosphate powder contain 0.1-0.5 weight% (as sum) elements selected from Be, Mg, Ca, Sr, Ba, and rare earth metals. Dispersion slurries contain the lithium phosphate powder with mean dispersion particle diameter 5-500 μm. Battery cathode active materials represented by LixAyEzPO4 (A = Cr, Mn, Fe, Co, Ni, Cu; E = Mg, Ca, Sr, Ba, Ti, Zn, B, Al, Ga, In, Si, Ge, Sc, Y, rare earth metal; $0 < x < 2$; $0 < y < 1.5$; $0 \leq z < 1.5$) are manufactured by (1) mixing the dispersion slurries with A-containing raw materials and optionally E-containing raw materials, and (2) heat treatment of the resultant slurries. The cathode active materials show high elec. conductivity and high c.d. in charging and discharging.
IT 1116680-41-1P, Calcium iron lithium phosphate
(cathode active material; manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)

RN 1116680-41-1 HCAPLUS
CN Calcium iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ca	x	7440-70-2
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7758-94-3, Iron chloride (FeCl2)
(in manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

Cl—Fe—Cl

IPCI C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-58 [I,A]; C01G0049-00 [I,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; C01G0049-00 [I,C]; C01G0049-00 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cathode lithium transition metal phosphate manuf; iron lithium phosphate battery cathode active material manuf; alk earth metal lithium transition metal phosphate battery cathode; rare earth additive lithium transition metal phosphate battery cathode
IT Alkaline earth metals
Rare earth metals
(lithium transition metal phosphate containing; manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
IT Secondary batteries
(lithium; manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
IT Battery cathodes
(manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(calcium-containing, cathode active material; manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
IT 10377-52-3P, Lithium phosphate (Li3PO4)
(calcium-containing, powder; in manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
IT 1116680-41-1P, Calcium iron lithium phosphate
(cathode active material; manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)
IT 7758-94-3, Iron chloride (FeCl2) 14940-41-1, Iron phosphate [Fe3(po4)2]
(in manufacture of Li transition metal phosphate containing additive metal

elements for battery cathodes)

IT 7439-95-4, Magnesium, uses 7440-24-6, Strontium, uses 7440-39-3, Barium, uses 7440-41-7, Beryllium, uses 7440-70-2, Calcium, uses (lithium phosphate powder containing; in manufacture of Li transition metal phosphate containing additive metal elements for battery cathodes)

L54 ANSWER 5 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:955541 HCAPLUS Full-text
DOCUMENT NUMBER: 153:339401
TITLE: Manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery
INVENTOR(S): Chen, Zhidong; Xu, Juan; Cao, Jianyu; Wang, Wenchang; Zhao, Yanqi; Chu, Kairong; Xu, Lide
PATENT ASSIGNEE(S): Jiangsu Polytechnic University, Peop. Rep. China; Jiangsu Wanli Battery Co., Ltd.
SOURCE: Faming Zhuanli Shenqing, 6pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101789502	A	20100728	CN 2010-10122322	20100312
PRIORITY APPLN. INFO.:			CN 2010-10122322	20100312

ED Entered STN: 03 Aug 2010
AB This cathode material comprises Li Fe phosphate pos . electrode base material synthesized from LiOH.H2O and FePO4.4H2O. The Li Fe phosphate pos. electrode base material contains one or more metal ions selected from Mn2+, Ni2+, Co3+, Cu2+, Zn2+, Zr4+, Al3+, Sn4+, Nb5+, Mg2+, and Ti4+, and is uniformly coated with C on the surface. Through doping metal ions in Li site, Li ion vacancies are generated in crystal lattices of Li Fe phosphate. Thus, the Li ion battery pos. electrode material has improved electronic conductivity, ion diffusion coefficient, discharge capacity, and cycle stability.
IT 1240426-09-8P, Iron lithium magnesium niobium phosphate (FeLi0.7Mg0.1Nb0.2(PO4)) 1240426-10-1P, Iron lithium magnesium niobium phosphate (FeLi0.6Mg0.2Nb0.2(PO4)) 1240426-11-2P, Iron lithium niobium phosphate (FeLi0.7Nb0.3(PO4)) 1240426-12-3P, Iron lithium magnesium phosphate (FeLi0.7Mg0.3(PO4)) 1240426-13-4P, Cobalt iron lithium nickel phosphate (Co0.2FeLi0.7Ni0.1(PO4))
(Carbon-coated; manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)
RN 1240426-09-8 HCAPLUS
CN Iron lithium magnesium niobium phosphate (FeLi0.7Mg0.1Nb0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.2	7440-03-1
Mg	0.1	7439-95-4
Li	0.7	7439-93-2
Fe	1	7439-89-6

RN 1240426-10-1 HCAPLUS
CN Iron lithium magnesium niobium phosphate (FeLi0.6Mg0.2Nb0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.2	7440-03-1
Mg	0.2	7439-95-4
Li	0.6	7439-93-2
Fe	1	7439-89-6

RN 1240426-11-2 HCAPLUS
CN Iron lithium niobium phosphate (FeLi0.7Nb0.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.3	7440-03-1
Li	0.7	7439-93-2
Fe	1	7439-89-6

RN 1240426-12-3 HCAPLUS
CN Iron lithium magnesium phosphate (FeLi0.7Mg0.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.3	7439-95-4
Li	0.7	7439-93-2
Fe	1	7439-89-6

RN 1240426-13-4 HCAPLUS
CN Cobalt iron lithium nickel phosphate (Co0.2FeLi0.7Ni0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.2	7440-48-4
Ni	0.1	7440-02-0
Li	0.7	7439-93-2
Fe	1	7439-89-6

IT 7447-39-4, Copper chloride, reactions 7773-01-5, Manganese chloride
(manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)
RN 7447-39-4 HCAPLUS
CN Copper chloride (CuCl2) (CA INDEX NAME)

RN 7773-01-5 HCAPLUS
CN Manganese chloride (MnCl2) (CA INDEX NAME)

Cl—Mn—Cl

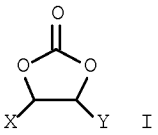
IPCI H01M0004-136 [I,A]; H01M0004-58 [I,A]; H01M0004-1397 [I,A]
IPCR H01M0004-02 [I,C]; H01M0004-136 [I,A]; H01M0004-1397 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium iron phosphate secondary battery cathode material
IT Secondary batteries
(lithium; manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)
IT Battery cathodes
(manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)
IT 1240426-09-8P, Iron lithium magnesium niobium phosphate (FeLi0.7Mg0.1Nb0.2(PO4)) 1240426-10-1P, Iron lithium magnesium niobium phosphate (FeLi0.6Mg0.2Nb0.2(PO4)) 1240426-11-2P, Iron lithium niobium phosphate (FeLi0.7Nb0.3(PO4)) 1240426-12-3P, Iron lithium magnesium phosphate (FeLi0.7Mg0.3(PO4)) 1240426-13-4P, Cobalt iron lithium nickel phosphate (Co0.2FeLi0.7Ni0.1(PO4)) 1240426-14-5P, Iron lithium magnesium niobium oxide (FeLi0.98Mg0.01Nb0.01O4) 1240426-15-6P, Iron lithium magnesium niobium oxide (FeLi0.1Mg0.7Nb0.2O4)
(Carbon-coated; manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)
IT 57-50-1, Sucrose, reactions 77-92-9, Citric acid, reactions 1308-04-9, Cobalt oxide (Co2O3) 1309-48-4, Magnesium oxide, reactions 1310-66-3, Lithium hydroxide monohydrate 1313-96-8, Niobium pentoxide 1313-99-1, Nickel oxide (NiO), reactions 1314-13-2, Zinc oxide, reactions 1314-23-4, Zirconium dioxide, reactions 1332-29-2, Tin oxide 1344-28-1, Alumina, reactions 7447-39-4, Copper chloride, reactions 7773-01-5, Manganese chloride 9002-89-5, Polyvinyl alcohol 9003-53-6, Polystyrene 13463-67-7, Titania, reactions 31096-47-6, Ferric phosphate tetrahydrate
(manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)
IT 7782-42-5, Graphite, uses 1034343-98-0, Graphene
(manufacturing of metal ion doped and carbon coated lithium iron phosphate cathode material for lithium ion battery)

L54 ANSWER 6 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:783903 HCAPLUS Full-text
DOCUMENT NUMBER: 153:121543
TITLE: Rechargeable lithium battery with high-capacity material for inhibiting volume expansion
INVENTOR(S): Kim, Jin-Sung; Park, Na-Rae; Han, Su-Hee; Lim, Jin-Hyunk
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 11pp.

CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20100159336	A1	20100624	US 2009-385154	20090331
KR 2010072805	A	20100701	KR 2008-131318	20081222
PRIORITY APPLN. INFO.:			KR 2008-131318 A	20081222

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
OTHER SOURCE(S): MARPAT 153:121543
ED Entered STN: 24 Jun 2010
GI



I

AB A rechargeable lithium battery includes an electrolyte including an additive such as an ethylene carbonate-based compound represented by Chemical Formula (I) and a silicon-included compound, and a neg. electrode including a neg. active material including an active element selected from the group consisting of Si, Sn, Ga, Cd, Al, Pb, Zn, Bi, In, Mg, and Ge. In Chemical formula I, X and Y are independently selected from the group consisting of hydrogen, a halogen, and a C1 through C5 fluoroalkyl, provided that at least one of X and Y is selected from the group consisting of a halogen and a C1 through C5 fluoroalkyl. The rechargeable lithium battery has a suppressed volume expansion characteristic due to a high-capacity neg. active material, and has excellent reliability and cycle-life characteristics.

IT 7447-41-8, Lithium chloride (LiCl), uses
10377-51-2, Lithium iodide (LiI)
(constituent of electrolyte; rechargeable lithium battery with high-capacity material for inhibiting volume expansion)

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

I—Li

IT 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(pos. electrode active material; rechargeable lithium battery with high-capacity material for inhibiting volume expansion)
RN 329025-35-6 HCAPLUS
CN Iron lithium phosphate (Fe2Li1-3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

INCL 429331000
IPCI H01M0006-16 [I,A]
IPCR H01M0006-16 [I,C]; H01M0006-16 [I,A]
NCL 429/331.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Carbon black
(conductive material; rechargeable lithium battery with high-capacity material for inhibiting volume expansion)
IT 52627-24-4, Lithium cobalt oxide
(cathode material; rechargeable lithium battery with high-capacity material for inhibiting volume expansion)
IT 96-49-1D, Ethylene carbonate, 4,5-derivs. 7447-41-8, Lithium chloride (LiCl), uses 7791-03-9, Lithium perchlorate (LiClO4) 10377-51-2, Lithium iodide (LiI) 12003-67-7, Aluminum lithium oxide (AlLiO2) 14024-11-4, Aluminum lithium chloride (AlLiCl4) 14283-07-9 18424-17-4 21324-40-3, Lithium hexafluorophosphate (LiPF6) 29935-35-1, Lithium hexafluoroarsenate (LiAsF6) 33454-82-9 90076-65-6 131651-65-5 132404-42-3 244761-29-3
(constituent of electrolyte; rechargeable lithium battery with high-capacity material for inhibiting volume expansion)
IT 1314-62-1, Vanadium oxide (V2O5), uses 12162-92-4, Lithium vanadate (LiV2O5) 13568-36-0, Lithium nickel vanadium oxide (LiNiVO4) 13765-03-2, Lithium iodate 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3) 1232359-75-9
(pos. electrode active material; rechargeable lithium battery with high-capacity material for inhibiting volume expansion)

L54 ANSWER 7 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:722005 HCAPLUS Full-text
DOCUMENT NUMBER: 153:75387
TITLE: Multicomponent nanoparticle materials and process and apparatus therefor
INVENTOR(S): Wang, Hai; Phares, Denis
PATENT ASSIGNEE(S): Tisol, LLC, USA
SOURCE: U.S. Pat. Appl. Publ., 20pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 20100140560	A1	20100610	US 2009-633629	20091208
WO 2010077665	A2	20100708	WO 2009-US67166	20091208
WO 2010077665	A3	20101007		

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA

PRIORITY APPLN. INFO.: US 2008-193582P P 20081208

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 11 Jun 2010

AB Multicomponent nanoparticles materials and apparatuses and processes therefor are disclosed. In one aspect of the disclosure, sep. particles generated from solution or suspension or by flame synthesis or flame spray pyrolysis, and the resultant particles are mixed in chamber prior to collection or deposition. In another aspect of the disclosure, nanoparticles are synthesized in stagnation or Bunsen flames and allowed to deposit by thermophoresis on a moving substrate. These techniques are scalable allowing mass production of multicomponent nanoparticles materials and films. The foregoing techniques can be used to prepare composites and component devices comprising one or more lithium based particles intimately mixed with carbon particles.

IT 7758-94-3, Iron chloride (FeCl2)
(multicomponent nanoparticle materials and process and apparatus)

RN 7758-94-3 HCAPLUS

CN Iron chloride (FeCl2) (CA INDEX NAME)

IT 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
(nanoparticles; multicomponent nanoparticle materials and process and apparatus)

RN 484039-86-3 HCAPLUS

CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

INCL 252509000; 261078100

IPCI H01B0001-06 [I,A]; B05B0007-02 [I,A]

IPCR H01B0001-06 [I,C]; H01B0001-06 [I,A]; B05B0007-02 [I,C]; B05B0007-02

[I,A]
NCL 252/509.000; 261/078.100
CC 76-14 (Electric Phenomena)
Section cross-reference(s): 49, 52
IT Aerosols
Battery cathodes
Fuel cell anodes
Nanocomposites
Nanodevices
Nanoparticles
Solutions
Suspensions
Thermophoresis
(multicomponent nanoparticle materials and process and apparatus)
IT 74-85-1, Ethylene, processes 74-98-6, Propane, processes 534-17-8, Cesium carbonate 546-68-9, Titanium isopropoxide 554-13-2, Lithium carbonate (Li2CO3) 7664-38-2, Phosphoric acid, processes 7758-94-3, Iron chloride (FeCl2) 7782-44-7, Oxygen, processes
(multicomponent nanoparticle materials and process and apparatus)
IT 7439-93-2DP, Lithium, compds. 7440-44-0P, Carbon, processes 12016-89-6P, Cobalt lithium manganese oxide (CoLiMnO4) 12031-65-1P, Lithium nickel oxide (LiNiO2) 12057-17-9P, Lithium manganese oxide (LiMn2O4) 12190-79-3P, Cobalt lithium oxide (CoLiO2) 13463-67-7P, Titania, processes 15365-14-7P, Iron lithium phosphate (FeLi(PO4)) 18649-05-3P, Cesium dihydrogen phosphate 35788-14-8P 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
(nanoparticles; multicomponent nanoparticle materials and process and apparatus)

L54 ANSWER 8 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:530044 HCAPLUS Full-text
DOCUMENT NUMBER: 152:530594
TITLE: Method for producing inorganic compounds
INVENTOR(S): Tarascon, Jean-Marie; Recham, Nadir; Armand, Michel
PATENT ASSIGNEE(S): Centre National de la Recherche Scientifique, Fr.; Universite de Picardie Jules Verne
SOURCE: PCT Int. Appl., 53pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2010046608	A1	20100429	WO 2009-FR52038	20091023
WO 2010046608	A9	20100617		

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,

ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA

FR 2937631	A1	20100430	FR 2008-5875	20081023
FR 2937631	B1	20101217		
FR 2946038	A1	20101203	FR 2009-53529	20090528

PRIORITY APPLN. INFO.: FR 2008-5875 A 20081023

FR 2009-53529 A 20090528

FR 2009-55233 A 20090727

OTHER SOURCE(S): MARPAT 152:530594

ED Entered STN: 29 Apr 2010

AB The invention relates to compds. (1) AaMm(YO4)yZz (1) where A is at least one element selected from the alkaline metals, alkaline earth metals, a doping element and a hole, M being (T1-1TV), T being one or more transition metals and T' being at least one element selected from Mg, Ca, Al, and the rare earths, 0 ≤t< 1; Y is a least one element selected from S, Se, P, As, Si, or Ge and Al; Z is at least one element selected from F, O or OH; a, m, y, and z are whole nos. of zero or above such that the elec. neutrality of the inorg. oxide (1) is respected, a ≥ O; m > O; y > 0; z ≥ O. The inventive oxides are obtained from precursors of the constituent elements by a method comprising the following steps: dispersion of said precursors in a liquid support comprising one or more ionic liqs. made up of a cation and an anion the elec. charges of which balance out to give a suspension of said precursors in said liquid, heating said suspension to a temperature of 25 to 380° and separation of said ionic liquid and the inorg. oxide (1) from the reaction of said precursors.

IT 7681-49-4, Sodium fluoride, processes
(method for producing inorg. compds.)

RN 7681-49-4 HCAPLUS

CN Sodium fluoride (NaF) (CA INDEX NAME)

F—Na

IT 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
(method for producing inorg. compds.)

RN 477779-90-1 HCAPLUS

CN Iron sodium fluoride phosphate (FeNa2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Fe	1	7439-89-6

IT 372075-87-1P, Iron lithium fluoride phosphate (FeLiF(PO4))
1202878-41-8P, Iron manganese sodium fluoride phosphate (Fe0.95Mn0.05Na2F(PO4))
(method for producing inorg. compds.)

RN 372075-87-1 HCAPLUS

CN Iron lithium fluoride phosphate (FeLiF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	1	7439-93-2
Fe	1	7439-89-6

RN 1202878-41-8 HCAPLUS
CN Iron manganese sodium fluoride phosphate (Fe0.95Mn0.05Na2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Mn	0.05	7439-96-5
Fe	0.95	7439-89-6

IT 7789-28-8, Ferrous fluoride
(method for producing inorg. compds.)
RN 7789-28-8 HCAPLUS
CN Iron fluoride (FeF2) (CA INDEX NAME)

F—Fe—F

IT 7789-24-4, Lithium fluoride, reactions
(precursor and reaction product; method for producing inorg. compds.)
RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

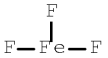
F—Li

IT 7758-94-3, Ferrous chloride 7782-64-1, Manganese difluoride 7783-50-8, Ferric fluoride 13470-08-1, Titanium trifluoride
(precursor; method for producing inorg. compds.)
RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

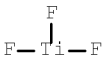
Cl—Fe—Cl

RN 7782-64-1 HCAPLUS
CN Manganese fluoride (MnF2) (CA INDEX NAME)

RN 7783-50-8 HCAPLUS
CN Iron fluoride (FeF3) (CA INDEX NAME)



RN 13470-08-1 HCAPLUS
CN Titanium fluoride (TiF3) (CA INDEX NAME)



IPCI C01B0013-14 [I,A]; C01B0025-45 [I,A]; C01D0001-02 [I,A]; C01G0049-02 [I,A]; C01B0025-30 [I,A]; H01M0004-48 [I,A]; C01B0013-14 [I,C]; C01B0013-14 [I,A]; C01B0025-00 [I,C]; C01B0025-30 [I,A]; C01B0025-45 [I,A]; C01D0001-00 [I,C]; C01D0001-02 [I,A]; C01G0049-02 [I,C]; C01G0049-02 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
IPCR C01B0013-14 [I,C]; C01B0013-14 [I,A]; C01B0025-00 [I,C]; C01B0025-30 [I,A]; C01B0025-45 [I,A]; C01D0001-00 [I,C]; C01D0001-02 [I,A]; C01G0049-02 [I,C]; C01G0049-02 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST complex oxide cathode ionic liq solvent sepn recycle reaction; hydroxide fluoride oxide precursor dispersion sulfate silicate synthesis cathode; ionic liq precursor dispersion hydroxide fluoride complex oxide synthesis; precursor ionic liq dispersion oxide phosphate germanate cathode synthesis; selenate arsenate aluminate precursor dispersion complex oxide synthesis purifn
IT Secondary batteries
(lithium, cathodes for; method for producing inorg. compds.)
IT Battery cathodes
(preparation of active material for; method for producing inorg. compds.)
IT Secondary batteries
(sodium anode, cathodes for; method for producing inorg. compds.)
IT 7681-49-4, Sodium fluoride, processes
(method for producing inorg. compds.)
IT 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
(method for producing inorg. compds.)
IT 12507-27-6P, Iron fluoride sulfate (FeF(SO4)) 189130-11-8P,

Manganese sodium fluoride phosphate (MnNa2F(PO4))
372075-87-1P, Iron lithium fluoride phosphate (FeLiF(PO4))
860266-09-7P, Lithium nickel fluoride sulfate (LiNiF(SO4))
860266-11-1P, Cobalt lithium fluoride sulfate (CoLiF(SO4))
1202878-41-8P, Iron manganese sodium fluoride phosphate (Fe0.95Mn0.05Na2F(PO4)) 1224593-52-5P, Iron sodium fluoride sulfate (FeNaF(SO4)) 1224593-55-8P, Iron lithium manganese fluoride sulfate (Fe0.5LiMn0.5F(SO4))
(method for producing inorg. compds.)

IT 6047-25-2, Ferrous oxalate, dihydrate 7601-54-9, Trisodium phosphate 7789-28-8, Ferrous fluoride 16399-77-2, Ferrous chloride, dihydrate
(method for producing inorg. compds.)

IT 7789-24-4, Lithium fluoride, reactions
(precursor and reaction product; method for producing inorg. compds.)

IT 62-76-0 68-04-2, Sodium citrate (Na3C6H5O7) 74-82-8D, Methane, bis- and tris-(fluoro-substituted) sulfonyl-containing derivs., salts with onium compds. 127-08-2 127-09-3 141-53-7 313-50-8D, Pentafluorophenylsulfonic acid, salts with onium compds. 454-50-2D, Tricyanomethane, perfluoroalkyl, trifluoromethoxydifluoroethyl, tetrafluoroethyl, and pentafluorophenyl derivs., salts with onium compds. 497-19-8, Sodium carbonate (Na2CO3), reactions 504-66-5D, Dicyanamide, perfluoroalkyl, trifluoromethoxydifluoroethyl, tetrafluoroethyl, and pentafluorophenyl derivs., salts with onium compds. 546-89-4 553-91-3, Lithium oxalate (Li2C2O4) 554-13-2, Lithium carbonate (Li2CO3) 556-63-8 583-52-8, Potassium oxalate(K2C2O4) 584-08-7, Potassium carbonate (K2CO3) 590-29-4 602-94-8D, Pentafluorobenzoic acid, salts with onium compds. 674-13-5D, salts with onium compds. 756-09-2D, 2,2,3,3-Tetrafluoropropanoic acid, salts with onium compds. 866-84-2 919-16-4 1310-58-3, Potassium hydroxide (K(OH)), reactions 1310-65-2, Lithium hydroxide (Li(OH)) 1310-73-2, Sodium hydroxide (Na(OH)), reactions 1313-60-6, Sodium peroxide (Na2(O2)) 1535-93-9 5006-97-3, Lithium carbonate (LiHCO3) 7631-99-4, Nitric acid sodium salt (1:1), reactions 7664-38-2, Phosphoric acid, reactions 7664-93-9, Sulfuric acid, reactions 7722-76-1, Ammonium phosphate (NH4H2PO4) 7757-79-1, Nitric acid potassium salt (1:1), reactions 7758-94-3, Ferrous chloride 7782-63-0, Ferrous sulfate, heptahydrate 7782-64-1, Manganese difluoride 7783-20-2, Sulfuric acid diammonium salt, reactions 7783-21-3 7783-28-0, Ammonium phosphate ((NH4)2HPO4) 7783-50-8, Ferric fluoride 7784-44-3, Ammonium arsenate ((NH4)2HAsO4) 7790-69-4 7803-63-6, Sulfuric acid, monoammonium salt 10034-96-5, Manganese sulfate, monohydrate 10102-24-6 10294-60-7, Ammonium selenate (NH4HSeO4) 10377-52-3, Trilithium phosphate 12030-88-5, Potassium oxide (KO2) 12031-80-0, Lithium peroxide (Li2(O2)) 13453-80-0 13453-84-4, Tetralithium silicate 13455-34-0, Cobalt sulfate, monohydrate 13462-93-6, Ammonium arsenate (NH4H2AsO4) 13470-08-1, Titanium trifluoride 14168-76-4, Nickel sulfate, monohydrate 16919-18-9D, Hexafluorophosphate, salts with onium compds. 17014-71-0, Potassium peroxide (K2(O2)) 77898-48-7D, salts with onium compds. 124302-50-7D, Pentafluorophenyltrifluoroborate (1-), salts with onium compds. 152894-10-5D, salts with onium compds. 197718-63-1D, perfluoroalkyl and trifluoromethoxydifluoroethyl derivs., salts with onium compds. 728879-12-7 1143623-30-6 1224593-51-4 1224593-56-9D, salts with onium compds. 1224593-57-0D, bis- perfluoroalkyl, pentafluorophenyl, tetrafluoroethyl, and trifluoromethoxydifluoroethyl derivs., salts with onium compds. 1224593-58-1D, salts with onium compds.

1224849-98-2D, salts with onium compds. 1224849-99-3D, salts with onium compds. 1224850-00-3D, salts with onium compds. 1224850-01-4D, salts with onium compds.
(precursor; method for producing inorg. compds.)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 9 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:472389 HCAPLUS Full-text
DOCUMENT NUMBER: 152:459404
TITLE: Lithium-mixed oxide particle composite powder for cathodes, manufacture of the powder, and nonaqueous electrolyte secondary batteries
INVENTOR(S): Watanabe, Hiroyasu; Imahashi, Hiroki; Kikutani, Kazuhiko; Tagami, Nobuyuki; Sadamura, Hideaki
PATENT ASSIGNEE(S): Toda Kogyo Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 19pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

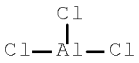
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2010086922	A	20100415	JP 2008-257863	20081002
PRIORITY APPLN. INFO.:			JP 2008-257863	20081002

ED Entered STN: 15 Apr 2010
AB The Li-mixed compound particle powder comprises Li transition metal mixed oxide core particles having average primary particle diameter ≥0.1 μm and average secondary particle diameter 1-20 μm and surfaces containing F and ≥1 of metals A (A = Mg, Al, Ti, Zn, Zr, and/or Y), wherein the surfaces satisfy cation intensity ratio (Li2F+/Li3O+) 1.0-100 and metal ion ratio of A and transition metal TM (A+/TM+) 1.0-1000 by time-of-flight type SIMS. Also claimed is the Li-mixed compound particle powder containing 0.01-1.0 atomic% A to the core particles. Preferably, the core particles are chosen from (1) Li1+xCo1-aM1aO2 (M1 = Mg, Al, Ti, Mn, Ni, Zr, and/or Sn; -0.05 ≤x ≤0.05; a = 0-0.3), (2) Li1+xNi1-bM2bO2 (M2 = Mg, Al, Ti, Mn, Co, Zr, and/or Sn; -0.05 ≤x ≤0.20; b = 0-0.7), (3) Li1+xMn2-cM3cO4 (M3 = Li, B, Mg, Al, Ti, Co, Ni, Zr, and/or Sn; x = 0-0.3; c = 0-0.6), and (4) Li1+xFe1-dM4dPO4 (M4 = Mg, Al, Mn, Co, Ni, Zr, and/or Sn; -0.05 ≤x ≤0.05; d = 0-0.3). The powder is manufactured from aqueous dispersion containing the oxide core particles by adding sulfates, nitrates, chlorides, oxalates, or alkoxides of A and F-containing neutralizer solns. to precipitate surfaces containing the metal salt of A and F and then heating under O atmospheric at 300-700°. The batteries are equipped with cathodes containing the oxide particle composite powder. The batteries provide high capacity, high-temperature stability, and long cycle life.
IT 1221230-53-0P, Iron lithium manganese phosphate (Fe0.98Li1.01Mn0.02(PO4))
(olivine-type, core; lithium-mixed oxide particle composite powder for battery cathodes)
RN 1221230-53-0 HCAPLUS
CN Iron lithium manganese phosphate (Fe0.98Li1.01Mn0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O4P	1	14265-44-2
Mn	0.02	7439-96-5
Li	1.01	7439-93-2
Fe	0.98	7439-89-6

IT 7446-70-0, Aluminum chloride, processes
(surface treatment by; lithium-mixed oxide particle composite powder for battery cathodes)
RN 7446-70-0 HCAPLUS
CN Aluminum chloride (AlCl3) (CA INDEX NAME)



IPCI H01M0004-485 [I,A]; H01M0004-36 [I,A]; H01M0004-525 [I,A]; H01M0004-505 [I,A]; H01M0004-58 [I,A]; C01G0053-00 [I,A]
IPCR H01M0004-48 [I,C]; H01M0004-485 [I,A]; C01G0053-00 [I,C]; C01G0053-00 [I,A]; H01M0004-36 [I,C]; H01M0004-36 [I,A]; H01M0004-50 [I,C]; H01M0004-505 [I,A]; H01M0004-52 [I,C]; H01M0004-525 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium mixed oxide particle fluorine composite powder battery cathode
IT Battery cathodes
(lithium-mixed oxide particle composite powder for battery cathodes)
IT Secondary batteries
(lithium; lithium-mixed oxide particle composite powder for battery cathodes)
IT 1221230-50-7P, Cobalt lithium magnesium oxide (Co0.98Li1.03Mg0.01O2)
(aluminum-doped, core; lithium-mixed oxide particle composite powder for battery cathodes)
IT 12031-65-1P, Lithium nickel oxide (LiNiO2) 12190-79-3P, Cobalt lithium oxide (CoLiO2) 474082-27-4P, Aluminum cobalt lithium nickel oxide (Al0.05Co0.15Li1.02Ni0.8O2) 1221230-52-9P, Cobalt lithium manganese nickel oxide (Co0.33Li1.17Mn0.33Ni0.33O2)
(core; lithium-mixed oxide particle composite powder for battery cathodes)
IT 7440-31-5, Tin, uses 7440-42-8, Boron, uses
(dopant, in lithium transition metal mixed oxide; lithium-mixed oxide particle composite powder for battery cathodes)
IT 12125-01-8, Ammonium fluoride
(neutralizer for surface treatment; lithium-mixed oxide particle composite powder for battery cathodes)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 1221230-53-0P, Iron lithium manganese phosphate (Fe0.98Li1.01Mn0.02(PO4))
(olivine-type, core; lithium-mixed oxide particle composite powder for battery cathodes)
IT 12057-17-9P, Lithium manganese oxide (LiMn2O4) 1221230-51-8P, Aluminum lithium manganese oxide (Al0.1Li1.08Mn1.9O4)
(spinel-type, core; lithium-mixed oxide particle composite powder for battery cathodes)
IT 7446-70-0, Aluminum chloride, processes 7733-02-0, Zinc sulfate 7790-69-4, Lithium nitrate 10043-01-3, Aluminum sulfate

10361-93-0, Yttrium nitrate 10377-60-3, Magnesium nitrate
13473-90-0, Aluminum nitrate
(surface treatment by; lithium-mixed oxide particle composite powder for battery cathodes)

IT 7440-32-6, Titanium, uses 7440-67-7, Zirconium, uses
(surfaces containing; lithium-mixed oxide particle composite powder for battery cathodes)

L54 ANSWER 10 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:150639 HCAPLUS Full-text
DOCUMENT NUMBER: 152:292517
TITLE: Method for preparing lithium titanium ferrous phosphate positive electrode material
INVENTOR(S): Li, Qi; Wan, Licheng; Sun, Hongfei
PATENT ASSIGNEE(S): BAK International (Tianjin) Limited, Peop. Rep. China; Shenzhen BAK Battery Co., Ltd.; BAK Environmental Protection New Material Technology (Hubei) Co., Ltd.
SOURCE: Faming Zhuanli Shenqing, 8pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101640271	A	20100203	CN 2008-10142216	20080731
PRIORITY APPLN. INFO.:			CN 2008-10142216	20080731

ED Entered STN: 05 Feb 2010
AB The title pos. electrode material has a mol. formula of Li1.02Ti0.02Fe0.96PO4/C. The pos. electrode material is prepared from a lithium source, a phosphorus source, a titanium source, an iron source, a fluorine source, and a carbon source at a lithium/phosphate/titanium/iron/fluorine mol. ratio of 0.76:1:0.02:1:0.2, and the carbon source is 2.0-4.0 weight% the total of lithium source, phosphorus source, titanium source, iron source, and fluorine source. The title method comprises the steps of: mixing the above raw materials, primarily calcining, exhausting, and secondarily calcining. The method can be performed at low temperature, and has adequate reaction. The pos. electrode material has good conductive performance and high processability.
IT 1210068-68-0P, Iron lithium titanium phosphate (Fe0.96Li1.02Ti0.02(PO4))
(preparation of lithium titanium ferrous phosphate pos. electrode material)
RN 1210068-68-0 HCAPLUS
CN Iron lithium titanium phosphate (Fe0.96Li1.02Ti0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.02	7440-32-6
Li	1.02	7439-93-2
Fe	0.96	7439-89-6

IT 7789-24-4, Lithium fluoride, reactions 7789-28-8

, Ferrous fluoride 51142-88-2, Titanium fluoride
(preparation of lithium titanium ferrous phosphate pos. electrode material)

RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

RN 7789-28-8 HCAPLUS
CN Iron fluoride (FeF2) (CA INDEX NAME)

RN 51142-88-2 HCAPLUS
CN Titanium fluoride (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	x	14762-94-8
Ti	x	7440-32-6

IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 47, 76
ST lithium titanium ferrous phosphate pos electrode material prepn
IT Secondary batteries
(lithium; preparation of lithium titanium ferrous phosphate pos. electrode material)
IT Ball milling
Battery cathodes
(preparation of lithium titanium ferrous phosphate pos. electrode material)
IT Hydrocarbons
(preparation of lithium titanium ferrous phosphate pos. electrode material)
IT 7440-44-0P, Carbon, uses 1210068-68-0P, Iron lithium titanium phosphate (Fe0.96Li1.02Ti0.02(PO4))
(preparation of lithium titanium ferrous phosphate pos. electrode material)
IT 64-17-5, Ethanol, uses 7727-37-9, Nitrogen, uses
(preparation of lithium titanium ferrous phosphate pos. electrode material)
IT 554-13-2, Lithium carbonate 1309-37-1, Ferric oxide, reactions 1310-66-3, Lithium hydroxide monohydrate 1317-61-9, Ferroferric oxide, reactions 1344-54-3, Titanium oxide (Ti2O3) 1345-25-1, Ferrous oxide, reactions 6047-25-2, Ferrous oxalate dihydrate 7664-39-3, Hydrofluoric acid, reactions 7722-76-1, Ammonium dihydrogen phosphate 7783-28-0, Diammonium hydrogen phosphate

7789-24-4, Lithium fluoride, reactions 7789-28-8, Ferrous fluoride 7790-69-4, Lithium nitrate 10361-65-6, Triammonium phosphate 10377-52-3, Lithium phosphate 10421-48-4, Ferric nitrate 12137-20-1, Titanium monoxide 13453-80-0, Lithium dihydrogen phosphate 13463-67-7, Titania, reactions 14013-86-6, Ferrous nitrate 33943-39-4, Dilithium hydrogen phosphate 39302-37-9, Lithium titanate 51142-88-2, Titanium fluoride
(preparation of lithium titanium ferrous phosphate pos. electrode material)

IT 57-50-1, Sucrose, uses 7782-42-5, Graphite, uses
(preparation of lithium titanium ferrous phosphate pos. electrode material)

L54 ANSWER 11 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2010:41550 HCAPLUS Full-text
DOCUMENT NUMBER: 152:196480
TITLE: Method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as positive electrode material of lithium ion battery by hydrothermal synthesis and electroless plating
INVENTOR(S): Lu, Yang; Cui, Ming; Xu, Hanliang; Zhang, Fan; Chen, Jingcai
PATENT ASSIGNEE(S): Great Power Li-Ion Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 8pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101621122	A	20100106	CN 2009-10041704	20090807
PRIORITY APPLN. INFO.:			CN 2009-10041704	20090807

ED Entered STN: 13 Jan 2010
AB The invention relates to a method for preparing lithium ferrous phosphate composite material as pos. electrode material of lithium ion battery. The method comprises dissolving lithium salt, ferrous salt, doping element compound and phosphate in deionized water; ultrasonically vibrating under stirring at 20-50 rpm at frequency of 0.5-20 MHz for 10-60 min; adjusting pH to 7-11, loading into high-pressure reactor, introducing into nitrogen gas or argon, sealing, heating to 150-200°C, and allowing hydrothermal synthesis for 3-10 h under stirring at 100-400 rpm; separating, filtering, washing with ethanol and deionized water, and vacuum drying at 70-110°C; sintering under N2 or Ar atmospheric at 300-650°C for 3-8 h to obtain spherical LixFeyMzPO4; adding into tin-containing sensitization solution, and stirring at 30-60 rpm and ultrasonically vibrating for 5-30 min for sensitization; filtering, washing, adding into palladium-containing activation solution, and stirring at 30-60 rpm and ultrasonically vibrating for 5-30 min for activation; and performing electroless plating to form metal or alloy coating on lithium ferrous phosphate surface. The obtained lithium ferrous phosphate composite has the advantages of high tap d. and high elec. conductivity The method is simple, and is suitable for industrial production

IT 895163-98-1P, Iron lithium nickel phosphate (FeLi0.98Ni0.02(PO4)) 912841-84-0P, Iron lithium nickel phosphate
(method for preparing spherical lithium ferrous metal phosphate/metal

or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

RN 895163-98-1 HCAPLUS
CN Iron lithium nickel phosphate (FeLi0.98Ni0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0.02	7440-02-0
Li	0.98	7439-93-2
Fe	1	7439-89-6

RN 912841-84-0 HCAPLUS
CN Iron lithium nickel phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7647-10-1, Palladium chloride 7772-99-8, Tin dichloride, uses
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

RN 7647-10-1 HCAPLUS
CN Palladium chloride (PdCl2) (CA INDEX NAME)

Cl—Pd—Cl

RN 7772-99-8 HCAPLUS
CN Tin chloride (SnCl2) (CA INDEX NAME)

Cl—Sn—Cl

IT 7758-94-3, Ferrous chloride
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

Cl—Fe—Cl

IPCI H01M0004-04 [I,A]; H01M0004-36 [I,A]; H01M0004-58 [I,A]; H01M0004-38 [I,A]
IPCR H01M0004-04 [I,C]; H01M0004-04 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST spherical lithium ferrous metal phosphate alloy composite prepn; hydrothermal synthesis electroless plating lithium ion battery cathode
IT Coating process
(electroless; method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT Secondary batteries
(lithium; method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT Battery anodes
Battery cathodes
Composites
Dopants
Electric conductivity
Electrodeposition
Filtration
Hydrothermal reaction
Sintering
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT Phosphates
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT Rare earth metals
(nonradioactive-; method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT Vibration
(ultrasonic; method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT Drying
(vacuum; method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT 7440-02-0, Nickel, uses 7440-22-4, Silver, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses
(electroless plating of; method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)
IT 1310-66-3, Lithium hydroxide monohydrate 7782-63-0, Ferrous sulfate

heptahydrate 13138-45-9, Nickel nitrate
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

IT 7440-05-3P, Palladium, uses
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

IT 7440-02-0DP, Nickel, composites with lithium ferrous metal phosphates 7440-50-8DP, Copper, composites with lithium ferrous metal phosphates 895163-98-1P, Iron lithium nickel phosphate (FeLi0.98Ni0.02(PO4)) 912841-84-0P, Iron lithium nickel phosphate
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

IT 50-00-0, Formaldehyde, uses 304-59-6, Sodium potassium tartrate 1336-21-6, Ammonia water 7440-37-1, Argon, uses 7727-37-9, Nitrogen gas, uses
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

IT 50-99-7, Glucose, uses 64-17-5, Ethanol, uses 631-61-8, Ammonium acetate 1310-73-2, Sodium hydroxide, uses 7440-22-4D, Silver, composites with lithium ferrous metal phosphates 7647-01-0, Hydrochloric acid, uses 7647-10-1, Palladium chloride 7772-99-8, Tin dichloride, uses 7786-81-4, Nickel sulfate 14475-11-7, Sodium tartrate 15475-67-9, Sodium phosphite
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 563-71-3, Ferrous carbonate 1310-65-2, Lithium hydroxide 3094-87-9, Ferrous acetate 7439-89-6D, Iron, salts 7439-93-2D, Lithium, salts 7664-38-2, Phosphoric acid, uses 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7723-14-0, Phosphorus, uses 7758-94-3, Ferrous chloride 7758-98-7, Copper sulfate, uses 7761-88-8, Silver nitrate, uses 7790-69-4, Lithium nitrate 13478-10-9, Ferrous chloride tetrahydrate 15365-14-7, Ferrous lithium phosphate
(method for preparing spherical lithium ferrous metal phosphate/metal or alloy composite material as pos. electrode material of lithium ion battery by hydrothermal synthesis and electroless plating)

L54 ANSWER 12 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1468435 HCAPLUS Full-text
DOCUMENT NUMBER: 152:22359
TITLE: Iron oxyfluoride electrodes for electrochemical energy storage
INVENTOR(S): Pereira, Nathalie; Amatucci, Glenn
PATENT ASSIGNEE(S): Rutgers University, USA
SOURCE: PCT Int. Appl., 79pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2009143324	A1	20091126	WO 2009-US44797	20090521

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: US 2008-55791P P 20080523

ED Entered STN: 26 Nov 2009

AB The present invention provides electrochem. energy storage systems comprising metallolyte composites, iron fluoride composites and iron oxyfluoride composites. The present invention further provides methods for fabricating metallolyte composites.

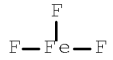
IT 484039-93-2, Iron lithium fluoride phosphate
(electrode conductive matrix, activated; iron oxyfluoride electrodes for electrochem. energy storage)

RN 484039-93-2 HCAPLUS
CN Iron lithium fluoride phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	x	14762-94-8
O4P	x	14265-44-2
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7783-50-8, Iron fluoride (FeF3) 11113-65-8, Iron fluoride
(iron oxyfluoride electrodes for electrochem. energy storage)

RN 7783-50-8 HCAPLUS
CN Iron fluoride (FeF3) (CA INDEX NAME)



RN 11113-65-8 HCAPLUS
CN Iron fluoride (CA INDEX NAME)

Component	Ratio	Component Registry Number

F		x	14762-94-8
Fe		x	7439-89-6

IT 7789-28-8P, Iron fluoride (FeF2)
(iron oxyfluoride electrodes for electrochem. energy storage)
RN 7789-28-8 HCAPLUS
CN Iron fluoride (FeF2) (CA INDEX NAME)

IPCI B01J0037-02 [I,A]; B01J0037-00 [I,C*]; H01M0008-12 [I,A]
IPCR B01J0037-00 [I,C]; B01J0037-02 [I,A]; H01M0008-12 [I,C]; H01M0008-12 [I,A]
CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 76
IT Nitrides
Oxides (inorganic)
Phosphates
Sulfates
Sulfides
(electrode conductive matrix, activated; iron oxyfluoride electrodes for electrochem. energy storage)
IT Group VA element compounds
(phosphides, electrode conductive matrix, activated; iron oxyfluoride electrodes for electrochem. energy storage)
IT 7440-44-0, Carbon, uses 10402-24-1, Iron phosphate 411234-54-3 484039-93-2, Iron lithium fluoride phosphate 880885-64-3
(electrode conductive matrix, activated; iron oxyfluoride electrodes for electrochem. energy storage)
IT 17084-08-1, Hexafluorosilicate
(electrode conductive matrix, complex with metals; iron oxyfluoride electrodes for electrochem. energy storage)
IT 7439-89-6D, Iron, complex with hexafluorosilcates 7439-92-1D, Lead, complex with hexafluorosilcates 7439-93-2D, Lithium, complex with hexafluorosilcates 7439-96-5D, Manganese, complex with hexafluorosilcates 7439-98-7D, Molybdenum, complex with hexafluorosilcates 7440-02-0D, Nickel, complex with hexafluorosilcates 7440-03-1D, Niobium, complex with hexafluorosilcates 7440-22-4D, Silver, complex with hexafluorosilcates 7440-31-5D, Tin, complex with hexafluorosilcates 7440-32-6D, Titanium, complex with hexafluorosilcates 7440-36-0D, Antimony, complex with hexafluorosilcates 7440-47-3D, Chromium, complex with hexafluorosilcates 7440-48-4D, Cobalt, complex with hexafluorosilcates 7440-50-8D, Copper, complex with hexafluorosilcates 7440-62-2D, Vanadium, complex with hexafluorosilcates 7440-69-9D, Bismuth, complex with hexafluorosilcates
(electrode conductive matrix; iron oxyfluoride electrodes for electrochem. energy storage)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7439-89-6, Iron, uses 7722-76-1, Ammonium dihydrogen phosphate 7783-28-0, Ammonium hydrogen phosphate 7783-50-8, Iron fluoride (FeF3) 7803-63-6, Ammonium hydrogen sulfate 11113-65-8, Iron fluoride 12021-70-4, Iron hexafluorosilicate hexahydrate 16961-83-4, Fluorosilicic acid 21324-40-3, Lithium hexafluorophosphate (LiPF6)

(iron oxyfluoride electrodes for electrochem. energy storage)
IT 7789-28-8P, Iron fluoride (FeF2)
(iron oxyfluoride electrodes for electrochem. energy storage)
IT 1197216-53-7, Iron fluoride oxide (FeF1-2O0-1)
(pos. electrode; iron oxyfluoride electrodes for electrochem. energy storage)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 13 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1401921 HCAPLUS Full-text
DOCUMENT NUMBER: 151:554946
TITLE: Olivine-type mixed oxide particulate powder for use in nonaqueous secondary batteries, method for their manufacture, and secondary batteries
INVENTOR(S): Honda, Shingo; Watanabe, Hiroyasu; Katamoto, Tsutomu
PATENT ASSIGNEE(S): Toda Kogyo Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 18pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2009266813	A	20091112	JP 2009-87900	20090331
PRIORITY APPLN. INFO.:			JP 2008-94031 A	20080331

ED Entered STN: 13 Nov 2009
AB The title powder has composition formula LixFe1-yMyPO4 (0.8 < x < 1.3; 0 ≤ y < 0.3; M = Mg, Zr, Mn, Al, Ti, Ce, Cr, Co, Ni, Nb, Mo), has average secondary particle size 0.05-50 μm, and compressed d. ≥2.00 g/cm3. The above given powder is manufactured by reaction of iron hydroxide particulate powder of average secondary particle size ≤2 μm, P raw materials, Li raw materials, and a reducing compound in an aqueous solution, followed by water rinsing, drying, and firing the product at 300-750° under a reducing atmospheric Nonaq. electrolyte secondary batteries with their cathode active materials containing the above given powder are also claimed. The particle powder shows high filling rate and gives batteries with large charge-discharge capacity.
IT 11119-46-3, Molybdenum chloride
(manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)
RN 11119-46-3 HCAPLUS
CN Molybdenum chloride (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	x	22537-15-1
Mo	x	7439-98-7

IT 1195266-31-9P, Iron lithium molybdenum phosphate (Fe0.99LiMo0.01(PO4)) 1195266-33-1P
(olivine-type; manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)
RN 1195266-31-9 HCAPLUS

CN Iron lithium molybdenum phosphate (Fe0.99LiMo0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mo	0.01	7439-98-7
Li	1	7439-93-2
Fe	0.99	7439-89-6

RN 1195266-33-1 HCAPLUS
CN Iron lithium molybdenum hydroxide phosphate (Fe0.99LiMo0.01(OH)(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	1	14265-44-2
Mo	0.01	7439-98-7
Li	1	7439-93-2
Fe	0.99	7439-89-6

IT 197856-93-2P, Iron lithium hydroxide phosphate (FeLi(OH)(PO4))
(tavorite-type; manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)
RN 197856-93-2 HCAPLUS
CN Iron lithium hydroxide phosphate (FeLi(OH)(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	1	14265-44-2
Li	1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium iron phosphate olivine mixed oxide cathode active material; iron hydroxide phosphate lithium reaction firing cathode
IT Battery cathodes
Secondary batteries
(manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)
IT 20344-49-4, Iron hydroxide oxide (Fe(OH)O)
(goethite-type, iron hydroxide oxide; manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)
IT 1310-65-2, Lithium hydroxide 7664-38-2, Orthophosphoric acid, processes 11119-46-3, Molybdenum chloride
(manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 1195266-31-9P, Iron lithium molybdenum phosphate (Fe0.99LiMo0.01(PO4)) 1195266-33-1P

(olivine-type; manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)

IT 197856-93-2P, Iron lithium hydroxide phosphate (FeLi(OH)(PO4))
(tavorite-type; manufacture of LiFe(PO4) particulate powder for nonaq. secondary battery cathodes)

L54 ANSWER 14 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1345317 HCAPLUS Full-text
DOCUMENT NUMBER: 152:124430
TITLE: Ionothermal Synthesis of Sodium-Based Fluorophosphate Cathode Materials
AUTHOR(S): Recham, N.; Chotard, J.-N.; Dupont, L.; Djellab, K.; Armand, M.; Tarascon, J.-M.
CORPORATE SOURCE: Laboratoire de Reactivite et Chimie des Solides, UMR CNRS 6007, Universite de Picardie Jules Verne, Amiens, 80039, Fr.
SOURCE: Journal of the Electrochemical Society (2009), 156(12), A993-A999
CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 03 Nov 2009
AB Owing to cost and abundance considerations, Na-based electrode materials are regaining interest, especially those that can be prepared at low temps. The low-temperature synthesis of highly divided Na-based fluorophosphates (Na2MPO4F, M = Fe, Mn, or mixts.) in ionic liquid media is presented. The ionothermal approach enables the synthesis of these phases at temps. ≥270°, while temps. ≤600°C are needed to obtain similar quality phases by solid-state reactions. Due to their highly divided character, Na2FePO4F powders made via this process show better electrochem. performances vs. either Li or Na than their ceramic counterparts. Regardless of how they were made, the Na2MnPO4F powders, which crystallize in a 3-dimensional (3D) tunnel structure rather than in the 2-dimensional (2D)-layered structure of Na2FePO4F, were poorly electroactive. Substituting 0.25 Fe for Mn in Na2Fe1-xMnxPO4F is sufficient to trigger a 2-dimensional-3D structural transition and leads to rapid decay of the materials electrochem. performances. A tentative explanation, based on structural considerations to account for such behavior, is given.
IT 7758-94-3, Iron chloride (FeCl2) 7773-01-5, Manganese chloride (MnCl2) 7782-64-1, Manganese fluoride (MnF2) 7789-28-8, Iron fluoride (FeF2)
(in ionothermal synthesis of sodium-based fluorophosphate cathode materials for secondary batteries)
RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

Cl—Fe—Cl

RN 7773-01-5 HCAPLUS
CN Manganese chloride (MnCl2) (CA INDEX NAME)

Cl—Mn—Cl

RN 7782-64-1 HCAPLUS
CN Manganese fluoride (MnF2) (CA INDEX NAME)

RN 7789-28-8 HCAPLUS
CN Iron fluoride (FeF2) (CA INDEX NAME)

IT 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
1202878-41-8P, Iron manganese sodium fluoride phosphate (Fe0.95Mn0.05Na2F(PO4)) 1202878-43-0P, Iron manganese sodium fluoride phosphate (Fe0.9Mn0.1Na2F(PO4))
1202878-45-2P, Iron manganese sodium fluoride phosphate (Fe0.85Mn0.15Na2F(PO4)) 1202878-46-3P, Iron manganese sodium fluoride phosphate (Fe0.75Mn0.25Na2F(PO4))
1202878-47-4P, Iron manganese sodium fluoride phosphate (Fe0.5Mn0.5Na2F(PO4))
(ionothermal synthesis of sodium-based fluorophosphate cathode materials for secondary batteries)
RN 477779-90-1 HCAPLUS
CN Iron sodium fluoride phosphate (FeNa2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Fe	1	7439-89-6

RN 1202878-41-8 HCAPLUS
CN Iron manganese sodium fluoride phosphate (Fe0.95Mn0.05Na2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Mn	0.05	7439-96-5
Fe	0.95	7439-89-6

RN 1202878-43-0 HCAPLUS
CN Iron manganese sodium fluoride phosphate (Fe0.9Mn0.1Na2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Mn	0.1	7439-96-5
Fe	0.9	7439-89-6

RN 1202878-45-2 HCAPLUS
CN Iron manganese sodium fluoride phosphate (Fe0.85Mn0.15Na2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Mn	0.15	7439-96-5
Fe	0.85	7439-89-6

RN 1202878-46-3 HCAPLUS
CN Iron manganese sodium fluoride phosphate (Fe0.75Mn0.25Na2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Mn	0.25	7439-96-5
Fe	0.75	7439-89-6

RN 1202878-47-4 HCAPLUS
CN Iron manganese sodium fluoride phosphate (Fe0.5Mn0.5Na2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Mn	0.5	7439-96-5
Fe	0.5	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST ionothermal synthesis sodium fluorophosphate cathode battery
IT Battery cathodes
Ionothermal reaction
(ionothermal synthesis of sodium-based fluorophosphate cathode materials for secondary batteries)
IT 7758-94-3, Iron chloride (FeCl2) 7773-01-5, Manganese chloride (MnCl2) 7782-64-1, Manganese fluoride (MnF2) 7789-28-8, Iron fluoride (FeF2)
(in ionothermal synthesis of sodium-based fluorophosphate cathode materials for secondary batteries)

IT 189130-11-8P, Manganese sodium fluoride phosphate (MnNa2F(PO4))
477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
1202878-41-8P, Iron manganese sodium fluoride phosphate (Fe0.95Mn0.05Na2F(PO4)) 1202878-43-0P, Iron manganese sodium fluoride phosphate (Fe0.9Mn0.1Na2F(PO4))
1202878-45-2P, Iron manganese sodium fluoride phosphate (Fe0.85Mn0.15Na2F(PO4)) 1202878-46-3P, Iron manganese sodium fluoride phosphate (Fe0.75Mn0.25Na2F(PO4))
1202878-47-4P, Iron manganese sodium fluoride phosphate (Fe0.5Mn0.5Na2F(PO4))
(ionothermal synthesis of sodium-based fluorophosphate cathode materials for secondary batteries)

OS.CITING REF COUNT: 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 15 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2009:1230932 HCAPLUS Full-text

DOCUMENT NUMBER: 151:452719

TITLE: Sodium ion based aqueous electrolyte electrochemical secondary energy storage device

INVENTOR(S): Whitacre, Jay

PATENT ASSIGNEE(S): Carnegie Mellon University, USA

SOURCE: U.S. Pat. Appl. Publ., 33 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20090253025	A1	20091008	US 2009-385277	20090403
AU 2009233974	A1	20091015	AU 2009-233974	20090403
CA 2720600	A1	20091015	CA 2009-2720600	20090403
WO 2009126525	A2	20091015	WO 2009-US39436	20090403
WO 2009126525	A3	20100121		
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
EP 2274789	A2	20110119	EP 2009-730906	20090403
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, RS				

PRIORITY APPLN. INFO.: US 2008-123230P P 20080407

US 2008-129257P P 20080613

US 2009-154156P P 20090220

WO 2009-US39436 W 20090403

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 08 Oct 2009

AB A secondary hybrid aqueous energy storage device includes an anode electrode, a cathode electrode which is capable of reversibly intercalating sodium cations, a separator, and a sodium cation containing aqueous electrolyte, wherein an initial active cathode electrode material comprises an alkali metal containing active cathode electrode material which deintercalates alkali metal ions during initial charging of the device.

IT 7647-14-5, Sodium chloride, uses 477779-90-1, Iron sodium fluoride phosphate (FeNa2F(PO4))
(sodium ion based aqueous electrolyte electrochem. secondary energy storage device)

RN 7647-14-5 HCAPLUS

CN Sodium chloride (NaCl) (CA INDEX NAME)

RN 477779-90-1 HCAPLUS

CN Iron sodium fluoride phosphate (FeNa2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Fe	1	7439-89-6

INCL 429050000; 429188000; 252500000

IPCI H01M0010-44 [I,A]; H01M0006-04 [I,A]; H01B0001-00 [I,A]

IPCR H01M0010-42 [I,C]; H01M0010-44 [I,A]; H01B0001-00 [I,C]; H01B0001-00 [I,A]; H01M0004-50 [I,C*]; H01M0004-50 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0006-04 [I,C]; H01M0006-04 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]

NCL 429/050.000; 252/500.000; 429/188.000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

IT Battery anodes
Battery cathodes
Capacitor electrodes
Secondary batteries
(sodium ion based aqueous electrolyte electrochem. secondary energy storage device)

IT 497-19-8, Sodium carbonate, uses 1310-73-2, Sodium hydroxide, uses 1313-13-9, Manganese dioxide, γ-, uses 7439-93-2D, Lithium, cubic spinel manganese oxide 7439-95-4D, Magnesium, cubic spinel manganese oxide 7439-95-4D, Magnesium, salt 7440-02-0, Nickel, uses 7440-09-7D, Potassium, cubic spinel manganese oxide 7440-09-7D, Potassium, salt 7440-23-5D, Sodium, cubic spinel manganese oxide 7440-32-6, Titanium, uses 7440-70-2D, Calcium, cubic spinel manganese oxide 7440-70-2D, Calcium, salt 7601-54-9,

Sodium phosphate 7601-89-0, Sodium perchlorate 7631-99-4, Sodium nitrate, uses 7647-14-5, Sodium chloride, uses 7757-82-6, Sodium sulfate, uses 7782-42-5, Graphite, uses 11099-11-9, Vanadium oxide 12244-32-5, Birnessite 12438-58-3, Manganese sodium oxide MnNaO2 12597-68-1, Stainless steel, uses 13463-67-7, Titanium oxide, uses 61179-01-9, Aluminum lithium manganese oxide 101062-39-9, Manganese sodium oxide (Mn3Na2O7) 137184-04-4, Manganese sodium oxide (MnNa0.44O2) 285134-55-6, Aluminum lithium manganese sodium oxide 477779-90-1, Iron sodium fluoride phosphate (FeNa2F(PO4))
(sodium ion based aqueous electrolyte electrochem. secondary energy storage device)

L54 ANSWER 16 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1176985 HCAPLUS Full-text
DOCUMENT NUMBER: 151:474423
TITLE: Method for preparing lithium ferric phosphate cathode material doped with na at li-site used for lithium ion cell
INVENTOR(S): Luo, Shaohua; He, Zhaoshu
PATENT ASSIGNEE(S): Jining Wujie Technology Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101540400	A	20090923	CN 2009-10020750	20090424
PRIORITY APPLN. INFO.:			CN 2009-10020750	20090424

ED Entered STN: 28 Sep 2009
AB The title lithium ferric phosphate cathode material has a chemical formula of Li1-x NaxFeO4, wherein, 0<x<0.03. The title method comprises the steps of mixing a Li-site raw material, a Na salt, a Fe-site raw material, and a P-site raw material with an adulterant, adding a ball-milling medium and a dispersant, ball-milling, oven-drying, pre-calcining in the protection of gas, ball-milling, oven-drying, and calcining to obtain lithium ferric phosphate powder doped with Na at Li-site. The method preps. lithium ferric phosphate powder with good crystallization properties and uniform components by controlling the time of ball milling and the temperature and the time of sintering. The discharge specific capacity at room temperature is larger than 100mAh/g. The obtained lithium ferric phosphate cathode material has the advantages of high capacity, good cycle performance, and easy industrialization.
IT 894355-11-4P, Iron lithium sodium phosphate (FeLi0.99Na0.01(PO4)) 894355-12-5P, Iron lithium sodium phosphate (FeLi0.98Na0.02(PO4)) 1068438-55-0P, Iron lithium sodium phosphate (FeLi0.97Na0.03(PO4))
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)
RN 894355-11-4 HCAPLUS
CN Iron lithium sodium phosphate (FeLi0.99Na0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	1	14265-44-2
Na	0.01	7440-23-5
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 894355-12-5 HCAPLUS
CN Iron lithium sodium phosphate (FeLi0.98Na0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Na	0.02	7440-23-5
Li	0.98	7439-93-2
Fe	1	7439-89-6

RN 1068438-55-0 HCAPLUS
CN Iron lithium sodium phosphate (FeLi0.97Na0.03(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Na	0.03	7440-23-5
Li	0.97	7439-93-2
Fe	1	7439-89-6

IT 7647-14-5, Sodium chloride, reactions 7758-94-3, Ferrous chloride
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)
RN 7647-14-5 HCAPLUS
CN Sodium chloride (NaCl) (CA INDEX NAME)

RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

IPCI H01M0004-58 [I,A]; H01M0004-04 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium ferric phosphate cathode material sodium doped
IT Secondary batteries
(lithium; method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)
IT Ball milling

Battery cathodes
Calcination
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT Carbon black
Fluoropolymers
Polyamides
Polyurethanes
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate (LiPF6)
(electrolyte; method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 7440-23-5, Sodium, uses
(lithium ferric phosphate doped with; method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 15365-14-7P 894355-11-4P, Iron lithium sodium phosphate (FeLi0.99Na0.01(PO4)) 894355-12-5P, Iron lithium sodium phosphate (FeLi0.98Na0.02(PO4)) 1068438-55-0P, Iron lithium sodium phosphate (FeLi0.97Na0.03(PO4))
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 64-17-5, Ethanol, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 127-09-3, Sodium acetate 497-19-8, Sodium carbonate, reactions 516-03-0, Ferrous oxalate 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 3094-87-9, Ferrous acetate 7647-14-5, Sodium chloride, reactions 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7757-82-6, Sodium sulfate, reactions 7758-94-3, Ferrous chloride 7783-28-0, Diammonium hydrogen phosphate 14940-41-1, Ferrous phosphate
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 1302-74-5, Corundum, uses 1314-23-4, Zirconia, uses 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 9003-07-0, Polypropylene 12070-12-1, Tungsten carbide 12597-68-1, Stainless steel, uses 15723-40-7, Agate 24937-79-9, Polyvinylidene fluoride
(method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

IT 411234-54-3, Iron Lithium phosphate
(sodium-doped; method for preparing lithium ferric phosphate cathode material doped with Na at Li-site used for lithium ion cell)

L54 ANSWER 17 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1087467 HCAPLUS Full-text
DOCUMENT NUMBER: 151:407599
TITLE: Manufacture of high-density spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery
INVENTOR(S): Li, Yongjun; Yan, Zhongqiang; Jiang, Mingxi; Liu, Huiji; Zhu, Yong; Wu, Lijun; Yuan, Chaoqun; Tao, Ye; Ding, Dongjiu; Li, Yanrong; Wu, Jing; Ma, Qian; Qiu, Ping

PATENT ASSIGNEE(S): Jinchuan Group Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 12pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101519199	A	20090902	CN 2009-10080462	20090319
PRIORITY APPLN. INFO.:			CN 2009-10080462	20090319

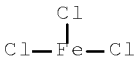
ED Entered STN: 08 Sep 2009

AB The title Li-Fe phosphate is manufactured by preparing a mixed aqueous solution of an acid, a ferric source and a P source; preparing an alkali aqueous solution; mixing the above solns. for co-precipitation reaction at 40-80° and pH of 1-5 to synthesize a spherical iron phosphate precursor; and mixing with a lithium source, a carbon source and a doping metal compound, performing primary thermal treatment in the presence of a protection gas (hydrogen gas, nitrogen gas, etc.) at 300-500° for 1-10 h, performing secondary thermal treatment at 600-800° for 8-48 h, and cooling to obtain spherical lithium iron phosphate particles. The obtained spherical lithium iron phosphate particle has controllable average particle size (4-15 μm), narrow particle size distribution, tap d. of 1.4-2.2 g/cm3, high specific capacity, and good rate discharge and safety properties. The inventive method is simple and suitable for large-scale industrial production

IT 912841-84-0P, Iron lithium nickel phosphate
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
RN 912841-84-0 HCAPLUS
CN Iron lithium nickel phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7705-08-0, Ferric chloride, reactions
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



IPCI C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-04 [I,A]; H01M0004-58 [I,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST spherical lithium iron phosphate manuf secondary battery

cathode
IT Secondary batteries
(lithium; manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT Ball milling
Battery cathodes
Drying
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT Particles
(spherical; manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 10045-86-0, Ferric phosphate
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 7440-44-0P, Carbon, uses
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 411234-54-3P, Iron lithium phosphate 554453-38-2P, Iron lithium manganese phosphate 912841-84-0P, Iron lithium nickel phosphate
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonia water 7647-01-0, Hydrochloric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 50-99-7, Glucose, processes
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 1313-13-9, Manganese dioxide, reactions 7601-54-9, Sodium phosphate 7664-38-2, Phosphoric acid, reactions 7705-08-0, Ferric chloride, reactions 7722-76-1, Ammonium dihydrogen phosphate 10421-48-4, Ferric nitrate 13138-45-9, Nickel nitrate
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)
IT 554-13-2, Lithium carbonate
(manufacture of spherical carbon coated lithium iron phosphate as cathode material of lithium secondary battery)

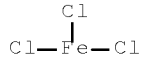
L54 ANSWER 18 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1027250 HCAPLUS Full-text
DOCUMENT NUMBER: 151:363115
TITLE: Preparation and use of spherical lithium iron phosphate cathode material for lithium batteries
INVENTOR(S): Wu, Feng; Wang, Feng; Wu, Chuan; Bai, Ying; Chen, Shi; Wu, Borong
PATENT ASSIGNEE(S): Beijing Institute of Technology, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 9pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

CN 101508431 A 20090819 CN 2009-10080855 20090324
PRIORITY APPLN. INFO.: CN 2009-10080855 20090324

ED Entered STN: 24 Aug 2009
AB This product has the formula LiFeaMbPO4, where M is Mg, Al, Ti, V, Cr, Mn, Co, Ni or/and Zn, 0.7≤a≤1 and 0≤b≤0.3. The method entails (a) preparing 0.01-3 M Fe source solution, 0.01-3 M metal salt solution and 0.01-3 M P source solution, resp.; (b) preparing a buffer solution; (c) mixing 4 solns. in reactor to obtain clear reaction liquor, regulating pH to 1.0-5.5, further stirring for 1h; (d) enclosing, placing in 35-90° constant temperature box, thermally holding for 0.5-48 h to obtain precipitate, separating, washing, drying to uniformly-dispersed spherical FeaMbPO4; and (e) mixing with Li source and C source, pre-decomposing in inert ambient at 350-450° for 2-8 h, allowing to react at 550-800° for 2-24 h to obtain uniformly-dispersed spherical LiFeaMbPO4. The metal salt is one or more of chloride, sulfate, nitrate and perchlorate. The P source is one or more of H3PO4, NH4H2PO4, (NH4)2HPO4, Na3PO4, NaH2PO4, Na2HPO4, K3PO4, KH2PO4 and K2HPO4. The Li source is one or more of LiCl, Li sulfate, LiNO3, Li carbonate, LiOH and LiOAc. Surfactant or/and complexing agent is added to reaction liquor in the step (a). The surfactant is one or more of polyvinyl pyrrolidone, polyvinyl alc., polyethylene glycol, cetyl tri-Me NH4Br, Triton, Span and Tween. The complexing agent is one or more of citric acid, tartaric acid and EDTA. The buffer solution is one or more of phosphate buffer, acetate buffer, aminoacetic acid-HCl mixture, chloroacetic acid-NaOH mixture and formic acid-NaOH mixture The products have particle sizes of 100-200 nm, tapping d. of 1.6-2.0 g/cm3 and 1st discharge sp. capacity of 140-160 mA-h/g. The invention has simple process and is easy to realize industrial production
IT 7447-41-8, Lithium chloride, reactions 7705-08-0, Ferric chloride, reactions
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



IT 727652-57-5P, Iron lithium titanium phosphate ((Fe,Ti)Li(PO4)) 912841-83-9P, Cobalt iron lithium phosphate 912841-84-0P, Iron lithium nickel phosphate 1038397-14-6P, Iron lithium vanadium phosphate 1038397-15-7P, Chromium iron lithium phosphate 1046864-59-8P, Iron lithium zinc phosphate
(preparation and use of spherical lithium iron phosphate cathode material for lithium batteries)
RN 727652-57-5 HCAPLUS

CN Iron lithium titanium phosphate ((Fe,Ti)Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0 - 1	7440-32-6
Li	1	7439-93-2
Fe	0 - 1	7439-89-6

RN 912841-83-9 HCAPLUS
CN Cobalt iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Co	x	7440-48-4
Li	x	7439-93-2
Fe	x	7439-89-6

RN 912841-84-0 HCAPLUS
CN Iron lithium nickel phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

RN 1038397-14-6 HCAPLUS
CN Iron lithium vanadium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
V	x	7440-62-2
Li	x	7439-93-2
Fe	x	7439-89-6

RN 1038397-15-7 HCAPLUS
CN Chromium iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Cr	x	7440-47-3
Li	x	7439-93-2
Fe	x	7439-89-6

RN 1046864-59-8 HCAPLUS
CN Iron lithium zinc phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P		x	14265-44-2
Zn		x	7440-66-6
Li		x	7439-93-2
Fe		x	7439-89-6

IPCI C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-58 [N,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST spherical particle lithium iron phosphate cathode lithium battery
IT Phosphates
(buffer; in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT Complexing agents
Surfactants
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT Polyoxyalkylenes
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT Carbon black
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT Secondary batteries
(lithium; preparation and use of spherical lithium iron phosphate cathode material for lithium batteries)
IT Battery cathodes
(preparation and use of spherical lithium iron phosphate cathode material for lithium batteries)
IT Particles
(spherical; preparation and use of spherical lithium iron phosphate cathode material for lithium batteries)
IT 57-09-0, Cetyltrimethylammonium bromide 60-00-4, EDTA, uses 64-18-6, Formic acid, uses 77-92-9, Citric acid, uses 87-69-4, Tartaric acid, uses 1310-73-2, Sodium hydroxide, uses 9002-89-5, Polyvinyl alcohol 9002-93-1, Triton X-100 9003-39-8, Polyvinyl pyrrolidone 25322-68-3, Polyethylene glycol
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT 50-99-7, Glucose, processes 56-40-6, Aminoacetic acid, processes 71-50-1, Acetate, processes 79-11-8, Chloroacetic acid, processes 7647-01-0, Hydrogen chloride, processes
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT 546-89-4, Lithium acetate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 7447-41-8, Lithium chloride, reactions 7558-79-4, Disodium hydrogen phosphate 7558-80-7, Sodium dihydrogen phosphate 7601-54-9, Sodium phosphate (Na3PO4) 7664-38-2, Phosphoric acid, reactions 7705-08-0, Ferric chloride, reactions 7722-76-1, Ammonium dihydrogen phosphate 7758-11-4, Dipotassium hydrogen phosphate 7778-53-2, Potassium phosphate (K3PO4) 7778-77-0, Potassium dihydrogen phosphate 7783-28-0, Diammonium hydrogen phosphate 7790-69-4, Lithium nitrate 10377-48-7, Lithium sulfate 10377-60-3, Magnesium nitrate
(in preparation of spherical lithium iron phosphate cathode material for lithium batterie)
IT 411234-54-3P, Iron lithium phosphate 554453-36-0P, Aluminum iron lithium phosphate 554453-38-2P, Iron lithium manganese phosphate

554453-42-8P, Iron lithium magnesium phosphate 632286-77-2P, Iron lithium magnesium phosphate (Fe0.9LiMg0.1PO4) 727652-57-5P, Iron lithium titanium phosphate ((Fe,Ti)Li(PO4)) 912841-83-9P, Cobalt iron lithium phosphate 912841-84-0P, Iron lithium nickel phosphate 1038397-14-6P, Iron lithium vanadium phosphate 1038397-15-7P, Chromium iron lithium phosphate 1046864-59-8P, Iron lithium zinc phosphate
(preparation and use of spherical lithium iron phosphate cathode material for lithium batteries)

L54 ANSWER 19 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:929897 HCAPLUS Full-text
DOCUMENT NUMBER: 151:302947
TITLE: Electrochemical capacitor having cathode comprising mixture of activated carbon and lithium intercalation compound
INVENTOR(S): Zhou, Shaoyun; Liu, Jiansheng; Zhang, Liping; Zhang, Ruoxin; Li, Yongkun; Yang, Chunwei
PATENT ASSIGNEE(S): Guangzhou Tinci Materials Technology Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 14pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101494123	A	20090729	CN 2009-10037614	20090306
PRIORITY APPLN. INFO.:			CN 2009-10037614	20090306

ED Entered STN: 04 Aug 2009
AB The capacitor comprises a cathode, an anode, a membrane separator between the cathode and the anode, and electrolyte. The anode material is activated carbon. The cathode material is the mixture or compound of activated carbon and Fe-series lithium intercalation compound or V-series lithium intercalation compound or Ni-Mn-Co-series lithium intercalation compound The electrolyte is a lithium salt solution comprising a supporting electrolyte. The cathode of the electrochem. capacitor combines the mechanisms of lithium ion battery and elec. double-layer capacitor to improve the high-rate discharging properties of the capacitor. The addition of the supporting electrolyte in the electrolyte increases the salt concentration and the ionic conduction to solve the problems of inadequate bulk electrolyte in forming elec. double layer and high conductivity requirement in high-rate discharge.
IT 7447-40-7, Potassium chloride, uses 7447-41-8, Lithium chloride, uses 7647-14-5, Sodium chloride, uses 331622-64-1, Cobalt iron lithium phosphate (Co0.1Fe0.9Li(PO4)) 554453-44-0, Iron lithium zirconium phosphate (Fe0.95LiZr0.05(PO4)) 1182199-36-5, Aluminum iron lithium phosphate (Al0.08Fe0.92Li(PO4))
(electrochem. capacitors having cathodes comprising mixture of activated carbon and lithium intercalation compds.)
RN 7447-40-7 HCAPLUS
CN Potassium chloride (KCl) (CA INDEX NAME)

Cl—K

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7647-14-5 HCAPLUS
CN Sodium chloride (NaCl) (CA INDEX NAME)

RN 331622-64-1 HCAPLUS
CN Cobalt iron lithium phosphate (Co0.1Fe0.9Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.1	7440-48-4
Li	1	7439-93-2
Fe	0.9	7439-89-6

RN 554453-44-0 HCAPLUS
CN Iron lithium zirconium phosphate (Fe0.95LiZr0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zr	0.05	7440-67-7
Li	1	7439-93-2
Fe	0.95	7439-89-6

RN 1182199-36-5 HCAPLUS
CN Aluminum iron lithium phosphate (Al0.08Fe0.92Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1	7439-93-2
Fe	0.92	7439-89-6
Al	0.08	7429-90-5

IPCI H01G0009-155 [I,A]; H01G0009-042 [I,A]; H01G0009-022 [I,A]
CC 76-10 (Electric Phenomena)
ST electrochem capacitor cathode activated carbon lithium intercalation compd
IT Cathodes

Electrolytes
Electrolytic capacitors
(electrochem. capacitors having cathodes comprising mixture of activated carbon and lithium intercalation compds.)

IT Phosphonium compounds
Quaternary ammonium compounds
(electrochem. capacitors having cathodes comprising mixture of activated carbon and lithium intercalation compds.)

IT 7440-44-0, Activated carbon, uses
(activated; electrochem. capacitors having cathodes comprising mixture of activated carbon and lithium intercalation compds.)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 429-06-1, Tetraethylammonium tetrafluoroborate 429-07-2, Tetraethylammonium hexafluorophosphate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 665-49-6, Tetraethylphosphonium tetrafluoroborate 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, uses 4437-85-8, Butylene carbonate 6484-52-2, Ammonium nitrate, uses 7447-40-7, Potassium chloride, uses 7447-41-8, Lithium chloride, uses 7631-99-4, Sodium nitrate, uses 7647-14-5, Sodium chloride, uses 7757-79-1, Potassium nitrate, uses 7757-82-6, Sodium sulfate, uses 7778-80-5, Potassium sulfate, uses 7783-20-2, Ammonium sulfate, uses 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate 10377-48-7, Lithium sulfate 12125-02-9, Ammonium chloride, uses 12162-79-7, Lithium manganese oxide (LiMnO2) 12190-79-3, Cobalt lithium oxide (LiCoO2) 12423-04-0, Lithium vanadium oxide (LiV3O8) 14283-07-9, Lithium tetrafluoroborate 15365-14-7 21324-40-3, Lithium hexafluorophosphate 30734-07-7 33454-82-9, Lithium trifluoromethanesulfonate 56525-42-9, Methyl propyl carbonate 69444-47-9, Methyltriethylammonium tetrafluoroborate 83348-01-0, Lithium vanadyl phosphate ((Li)VOPO4) 84159-18-2, Lithium vanadium phosphate (Li3V2(PO4)3) 111928-12-2 113066-91-4, Cobalt lithium nickel oxide (Co0.8LiNi0.2O2) 118812-70-7, Diethyldimethylammonium tetrafluoroborate 118812-71-8 118819-42-4, Cobalt lithium manganese oxide (Co0.1LiMn0.9O2) 120226-90-6 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.5O2) 182442-95-1, Cobalt lithium manganese nickel oxide 183850-62-6 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 207990-15-6, Cobalt lithium manganese oxide (Co0.2LiMn0.8O2) 244761-29-3, Lithium bis(oxalato)borate 331622-64-1, Cobalt iron lithium phosphate (Co0.1Fe0.9Li(PO4)) 372075-83-7, Lithium vanadium fluoride phosphate (LiVF(PO4)) 405890-08-6, Aluminum lithium manganese nickel oxide (Al0.1LiMn0.45Ni0.45O2) 554453-44-0, Iron lithium zirconium phosphate (Fe0.95LiZr0.05(PO4)) 632286-77-2, Iron lithium magnesium phosphate (Fe0.9LiMg0.1PO4) 1123188-92-0 1182199-31-0 1182199-36-5, Aluminum iron lithium phosphate (Al0.08Fe0.92Li(PO4)) 1182199-38-7 1182199-41-2, Iron lithium magnesium silicate (Fe0.95Li2Mg0.05(SiO4)) 1182199-50-3
(electrochem. capacitors having cathodes comprising mixture of activated carbon and lithium intercalation compds.)

L54 ANSWER 20 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:894398 HCAPLUS Full-text
DOCUMENT NUMBER: 151:270096
TITLE: Surface modification method of cathode active material for secondary lithium battery
INVENTOR(S): Bai, Ying; Wang, Zhaoxiang; Chen, Liquan
PATENT ASSIGNEE(S): Institute of Physics, Chinese Academy of Sciences,

Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 12pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101488568	A	20090722	CN 2008-10056144	20080114
PRIORITY APPLN. INFO.:			CN 2008-10056144	20080114

ED Entered STN: 27 Jul 2009
AB The method comprises adding (by weight) 0.01-45% surface modifier and 0-45% lithium-containing compound (such as lithium fluoride, lithium chloride, lithium hydroxide, etc.) into a cathode active material; mixing uniformly, heating to 250-1000° at 10-300°/min, holding for 20 min-20 days, taking out, and rapidly cooling to room temperature in water or liquid nitrogen; washing, and performing solid-liquid separation; and drying the solid. The secondary lithium battery using the modified cathode active material has high specific capacity, good cycle performance and improved thermal safety.
IT 7447-39-4, Copper chloride, uses 7646-85-7, Zinc chloride, uses 7699-45-8, Zinc bromide 7772-99-8, Tin dichloride, uses 7786-30-3, Magnesium chloride, uses 7790-87-6, Cerium triiodide 10099-58-8, Lanthanum chloride (LaCl3) 10361-92-9, Yttrium chloride (YCl3) 11129-27-4, Copper bromide 13400-13-0, Cesium fluoride 13783-08-9, Titanium triiodide 19139-47-0, Cerium diiodide
(Surface modification method of cathode active materials for secondary lithium batteries)
RN 7447-39-4 HCAPLUS
CN Copper chloride (CuCl2) (CA INDEX NAME)

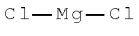
RN 7646-85-7 HCAPLUS
CN Zinc chloride (ZnCl2) (CA INDEX NAME)

RN 7699-45-8 HCAPLUS
CN Zinc bromide (ZnBr2) (CA INDEX NAME)

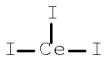
RN 7772-99-8 HCAPLUS

CN Tin chloride (SnCl2) (CA INDEX NAME)

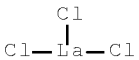
RN 7786-30-3 HCAPLUS
CN Magnesium chloride (MgCl2) (CA INDEX NAME)



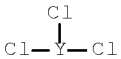
RN 7790-87-6 HCAPLUS
CN Cerium iodide (CeI3) (CA INDEX NAME)



RN 10099-58-8 HCAPLUS
CN Lanthanum chloride (LaCl3) (CA INDEX NAME)



RN 10361-92-9 HCAPLUS
CN Yttrium chloride (YCl3) (CA INDEX NAME)

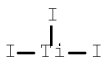


RN 11129-27-4 HCAPLUS
CN Copper bromide (CA INDEX NAME)

Component	Ratio	Component Registry Number
Br	x	10097-32-2
Cu	x	7440-50-8

RN 13400-13-0 HCAPLUS
CN Cesium fluoride (CsF) (CA INDEX NAME)

RN 13783-08-9 HCAPLUS
CN Titanium iodide (TiI3) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 19139-47-0 HCAPLUS
CN Cerium iodide (CeI2) (7CI, 8CI, 9CI) (CA INDEX NAME)

IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 1023672-60-7, Copper iron lithium phosphate (Cu0.02Fe0.98Li(PO4)) 1179981-52-2, Copper iron lithium sodium phosphate (Cu0.02Fe0.95LiNa0.03(PO4))
(Surface modification method of cathode active materials for secondary lithium batteries)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

RN 1023672-60-7 HCAPLUS
CN Copper iron lithium phosphate (Cu0.02Fe0.98Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.02	7440-50-8
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 1179981-52-2 HCAPLUS
CN Copper iron lithium sodium phosphate (Cu0.02Fe0.95LiNa0.03(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.02	7440-50-8
Na	0.03	7440-23-5
Li	1	7439-93-2
Fe	0.95	7439-89-6

IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; B01J0019-00 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST surface modification cathode cobalt lithium oxide secondary battery safety
IT Surface treatment
(Surface modification method of cathode active materials for secondary lithium batteries)
IT 1310-58-3, Potassium hydroxide, uses 7447-39-4, Copper chloride, uses 7646-85-7, Zinc chloride, uses 7699-45-8, Zinc bromide 7772-99-8, Tin dichloride, uses 7785-87-7, Manganese sulfate 7786-30-3, Magnesium chloride, uses 7790-87-6, Cerium triiodide 10022-31-8, Barium nitrate 10043-01-3, Aluminum sulfate 10099-58-8, Lanthanum chloride (LaCl3) 10361-92-9, Yttrium chloride (YCl3) 10377-66-9, Manganese nitrate 11129-27-4, Copper bromide 12134-27-9, Cesium sulfide (Cs2(S3)) 13400-13-0, Cesium fluoride 13548-38-4, Chromium nitrate (Cr(NO3)3) 13783-08-9, Titanium triiodide 13826-66-9, Zirconium oxynitrate 13860-02-1, Titanium nitrate 19139-47-0, Cerium diiodide
(Surface modification method of cathode active materials for secondary lithium batteries)
IT 13473-90-0, Aluminum nitrate
(Surface modification method of cathode active materials for secondary lithium batteries)
IT 1310-65-2, Lithium hydroxide 1314-62-1, Vanadium pentoxide, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 7790-69-4, Lithium nitrate 12016-91-0, Cobalt lithium manganese oxide (Co0.5LiMn1.5O4) 12036-21-4, Vanadium dioxide 12037-42-2, Vanadium oxide (V6O13) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 12423-04-0, Lithium vanadium oxide (LiV3O8) 13568-36-0, Lithium nickel vanadium oxide (LiNiVO4) 13824-63-0, Cobalt lithium phosphate (CoLiPO4) 13826-59-0, Lithium manganese phosphate (LiMnPO4) 15365-14-7, Iron

lithium phosphate (FeLiPO4) 30734-07-7, Iron lithium silicate (FeLi2SiO4) 36058-25-0, Iron lithium phosphate (Fe2Li3(PO4)3) 39300-70-4, Lithium nickel oxide 84159-18-2, Lithium vanadium phosphate (Li3V2(PO4)3) 113066-89-0, Cobalt lithium nickel oxide (Co0.2LiNi0.8O2) 114778-10-8, Iron lithium sulfate (Fe2Li2(SO4)3) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.5O2) 130732-38-6, Iron lithium manganese oxide (Fe0.2LiMn1.8O4) 136479-37-3, Lithium magnesium manganese oxide (LiMg0.2Mn1.8O4) 138577-45-4, Copper vanadium oxide (Cu0.1V2O5) 142816-11-3, Lithium magnesium manganese nickel oxide (LiMg0.2Mn1.5Ni0.3O4) 146956-26-5, Cobalt lithium manganese oxide (Co0.1LiMn1.9O4) 155604-54-9, Chromium cobalt lithium oxide (Cr0.2Co0.8LiO2) 172484-44-5, Aluminum lithium nickel oxide (Al0.25LiNi0.75O2) 172920-30-8, Copper silver vanadium oxide (Cu0.5Ag0.5V2O5.75) 192754-70-4, Chromium lithium manganese oxide (Cr0.3LiMn1.7O4) 200938-44-9, Lithium manganese nickel oxide (LiMnNiO4) 208591-98-4, Lithium manganese zinc oxide (LiMn1.95Zn0.05O4) 220516-32-5, Aluminum lithium manganese oxide (Al0.05LiMn1.95O4) 234114-06-8, Aluminum cobalt lithium oxide (Al0.15Co0.85LiO2) 272123-09-8, Vanadium zinc oxide (V2Zn0.02O5) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 435268-68-1, Lithium nickel titanium oxide (LiNi0.95Ti0.05O2) 457073-96-0, Chromium lithium manganese nickel oxide (Cr0.1LiMn1.5Ni0.4O4) 464174-90-1 470661-51-9, Aluminum cobalt lithium nickel oxide (Al0.2Co0.5LiNi0.3O2) 632286-77-2, Iron lithium magnesium phosphate (Fe0.9LiMg0.1PO4) 919282-68-1, Lithium manganese nickel oxide (LiMn1.25Ni0.75O4) 1023672-60-7, Copper iron lithium phosphate (Cu0.02Fe0.98Li(PO4)) 1179981-50-0, Aluminum vanadium oxide (Al0.05V2O5) 1179981-51-1, Lithium manganese vanadium oxide (LiMn1.55V0.45O4) 1179981-52-2, Copper iron lithium sodium phosphate (Cu0.02Fe0.95LiNa0.03(PO4))
(Surface modification method of cathode active materials for secondary lithium batteries)

L54 ANSWER 21 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:820615 HCAPLUS Full-text
DOCUMENT NUMBER: 151:226065
TITLE: Cathode-active material for secondary batteries
INVENTOR(S): Tian, Ye; Cheng, Tangli; Xi, Xiaobing
PATENT ASSIGNEE(S): BYD Company Limited, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 31pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 11
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101478042	A	20090708	CN 2008-10189238	20081226
WO 2010051746	A1	20100514	WO 2009-CN74769	20091103

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR,

HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO,
SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD,
SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

WO 2010051749 A1 20100514 WO 2009-CN74774 20091103

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC,
EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS,
LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG,
NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE,
SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,
US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR,
HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO,
SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD,
SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: CN 2008-10173652 A 20081105

CN 2008-10175243 A 20081106

US 2008-316165 A 20081209

US 2008-316180 A 20081209

CN 2008-10189233 A 20081226

CN 2008-10189235 A 20081226

CN 2008-10189238 A 20081226

ED Entered STN: 09 Jul 2009

AB This material comprises a mixture of compds. A and B. Compound A is selected from one or more substances shown in general formulas LixM'y(XO4)z, LiM'XO5, LiM'XO6, and LiM'X2O7, wherein, 0<x/z<=1; 0<y/z<=1.1; M' is one or more of Na, Mn, Fe, Co, Ni, Ti, V, Y, Mg, Ca and Zn; X is P, S, As, Mo or W. Compound B is selected from one or more substances shown in general formula AaMbNcOd, wherein, A, M and N are different from each other, and are selected from metal elements in groups IIA, IIIA, IVA, VA, IB, IIB, IIIB, IVB, VB, VIB, VIIB and VIII; 0<=a<=6; 0<=b<=6; 0<c<=6; 0<d<=12; a and b are not 0 at the same time. The active material has an electron conductivity of 0.01-10 S/cm at 25°, and improves the quality, sp. capacity and cyclic properties of a battery.

IT 898222-37-2, Iron lithium titanium phosphate (Fe0.95LiTi0.05(PO4))
(cathode-active material for secondary batteries)

RN 898222-37-2 HCAPLUS

CN Iron lithium titanium phosphate (Fe0.95LiTi0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.05	7440-32-6
Li	1	7439-93-2
Fe	0.95	7439-89-6

IT 854751-55-6, Iron lithium nickel phosphate (Fe0.9LiNi0.1(PO4))
(cathode-active material for secondary batteries)

RN 854751-55-6 HCAPLUS
CN Iron lithium nickel phosphate (Fe0.9LiNi0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0.1	7440-02-0
Li	1	7439-93-2
Fe	0.9	7439-89-6

IT 905816-56-0, Iron lithium yttrium phosphate (FeLi0.99Y0.01(PO4)) 1093067-73-2, Iron lithium magnesium phosphate (Fe0.97LiMg0.03(PO4)) 1174924-62-9, Cobalt iron lithium phosphate (Co0.01Fe0.99Li(PO4)) 1174924-64-1, Iron lithium manganese phosphate (Fe0.98LiMn0.02(PO4)) 1174924-66-3, Calcium iron lithium phosphate (Ca0.05Fe0.95Li(PO4)) 1174924-67-4, Iron lithium zinc phosphate (Fe0.93LiZn0.07(PO4))
(cathode-active material for secondary batteries)
RN 905816-56-0 HCAPLUS
CN Iron lithium yttrium phosphate (FeLi0.99Y0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Y	0.01	7440-65-5
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 1093067-73-2 HCAPLUS
CN Iron lithium magnesium phosphate (Fe0.97LiMg0.03(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.03	7439-95-4
Li	1	7439-93-2
Fe	0.97	7439-89-6

RN 1174924-62-9 HCAPLUS
CN Cobalt iron lithium phosphate (Co0.01Fe0.99Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.01	7440-48-4
Li	1	7439-93-2
Fe	0.99	7439-89-6

RN 1174924-64-1 HCAPLUS
CN Iron lithium manganese phosphate (Fe0.98LiMn0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	1	14265-44-2
Mn	0.02	7439-96-5
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 1174924-66-3 HCAPLUS
CN Calcium iron lithium phosphate (Ca0.05Fe0.95Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ca	0.05	7440-70-2
Li	1	7439-93-2
Fe	0.95	7439-89-6

RN 1174924-67-4 HCAPLUS
CN Iron lithium zinc phosphate (Fe0.93LiZn0.07(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zn	0.07	7440-66-6
Li	1	7439-93-2
Fe	0.93	7439-89-6

IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide
(electrolyte; cathode-active material for secondary batteries)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

IPCI H01M0004-36 [I,A]; H01M0004-02 [I,A]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary battery cathode
IT Styrene-butadiene rubber
(block, binder; cathode-active material for secondary batteries)
IT Carbon black
(carbon source; cathode-active material for secondary batteries)
IT Battery cathodes

Secondary batteries
(cathode-active material for secondary batteries)
IT Fluoropolymers
(cathode-active material for secondary batteries)
IT Carbon fibers
(conductor; cathode-active material for secondary batteries)
IT Metals
(conductors; cathode-active material for secondary batteries)
IT Glass fibers
Polyolefins
(diaphragm; cathode-active material for secondary batteries)
IT Secondary batteries
(lithium; cathode-active material for secondary batteries)
IT 9002-84-0, Polytetrafluoroethylene 9004-62-0, Hydroxyethyl cellulose 9004-65-3, Hydroxypropyl methyl cellulose 24937-79-9, Polyvinylidene fluoride 37353-59-6, Hydroxymethyl cellulose
(binder; cathode-active material for secondary batteries)
IT 9002-89-5, Polyvinyl alcohol
(binder; for cathode-active material for secondary batteries)
IT 898222-37-2, Iron lithium titanium phosphate (Fe0.95LiTi0.05(PO4))
(cathode-active material for secondary batteries)
IT 854751-55-6, Iron lithium nickel phosphate (Fe0.9LiNi0.1(PO4))
(cathode-active material for secondary batteries)
IT 15365-14-7, Iron lithium phosphate (LiFePO4) 952209-25-5, Aluminum zinc oxide (AlZnO2)
(cathode-active material for secondary batteries)
IT 7440-44-0, Carbon, uses
(cathode-active material for secondary batteries)
IT 373-02-4 513-77-9, Barium carbonate 516-03-0, Iron oxalate 598-62-9, Manganese carbonate 1305-78-8, Calcium oxide, reactions 1307-96-6, Cobalt oxide, reactions 1309-48-4, Magnesium oxide, reactions 1313-96-8, Niobium pentoxide 1314-13-2, Zinc oxide, reactions 1314-23-4, Zirconia, reactions 1314-35-8, Tungsten trioxide, reactions 1314-36-9, Yttrium trioxide, reactions 1314-61-0, Tantalum pentoxide 1317-38-0, Copper oxide, reactions 1344-28-1, Alumina, reactions 1345-25-1, Ferrous oxide, reactions 3486-35-9, Zinc carbonate 7722-76-1, Ammonium dihydrogen phosphate 13463-67-7, Titania, reactions 18282-10-5, Tin dioxide
(cathode-active material for secondary batteries)
IT 7440-02-0, Nickel, uses 11121-75-8, Lithium tungsten vanadium oxide (LiWVO6) 12010-77-4, Bismuth titanate (Bi4Ti3O12) 12055-24-2, Hafnium titanium oxide (HfTiO4) 12059-60-8, Nickel niobate (NiNb2O6) 12163-26-7, Magnesium niobate (MgNb2O6) 12273-00-6, Copper niobate (CuNb2O6) 12299-92-2, Lithium molybdenum vanadium oxide (LiMoVO6) 13824-63-0 13826-59-0, Lithium manganese phosphate (LiMnPO4) 13870-24-1, Iron tungsten oxide (FeWO4) 30622-39-0, Lithium titanium phosphate (LiTi2(PO4)3) 36058-25-0 84159-18-2, Lithium vanadium phosphate (Li3V2(PO4)3) 117128-02-6, Barium titanium yttrium oxide (Ba3Ti2YO8.5) 129164-89-2 138198-90-0, Lithium titanium oxide phosphate (LiTiO(PO4)) 158303-65-2, Niobium zinc zirconium oxide (Nb2ZnZrO8) 158835-39-3, Copper niobium zinc oxide (Cu0.85Nb2Zn0.15O6) 159662-45-0 159664-35-4, Manganese niobium titanium oxide (MnNb2TiO8) 159664-39-8, Magnesium niobium tin oxide

(MgNb2SnO8) 159664-43-4, Nickel niobium zirconium oxide (NiNb2ZrO8) 432043-77-1, Tin titanium zirconium oxide (Sn0.5Ti0.75Zr0.75O4) 905816-56-0, Iron lithium yttrium phosphate (FeLi0.99Y0.01(PO4)) 929616-65-9, Tantalum zinc oxide (TaZnO6) 951777-58-5, Lithium sodium vanadium phosphate (Li2NaV2(PO4)3) 1093067-73-2, Iron lithium magnesium phosphate (Fe0.97LiMg0.03(PO4)) 1174924-62-9, Cobalt iron lithium phosphate (Co0.01Fe0.99Li(PO4)) 1174924-64-1, Iron lithium manganese phosphate (Fe0.98LiMn0.02(PO4)) 1174924-66-3, Calcium iron lithium phosphate (Ca0.05Fe0.95Li(PO4)) 1174924-67-4, Iron lithium zinc phosphate (Fe0.93LiZn0.07(PO4)) 1174936-64-1, Manganese tantalum oxide (MnTaO4) 1174936-65-2, Iron niobium titanium oxide (FeNb2TiO8)
(cathode-active material for secondary batteries)

IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses
(current collector; cathode-active material for secondary batteries)

IT 9002-88-4, Polyethylene
(diaphragm; cathode-active material for secondary batteries)

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 56525-42-9, Methyl propyl carbonate
(electrolyte containing; cathode-active material for secondary batteries)

IT 2550-62-1, Lithium methanesulfonate 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate (LiClO4) 14024-11-4, Aluminum lithium chloride (AlLiCl4) 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 17347-95-4, Lithium hexafluoro silicate 21324-40-3, Lithium hexafluorophosphate (LiPF6) 29935-35-1, Lithium hexafluoro arsenate (LiAsF6) 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 132404-42-3, Lithium tris(trifluoromethanesulfonyl)methide
(electrolyte; cathode-active material for secondary batteries)

IT 50-99-7, Glucose, uses 57-50-1, Sucrose, uses 77-92-9, Citric acid, uses 7782-42-5D, Graphite, carbon source 9004-53-9, Dextrin 9005-25-8, Starch, uses
(for cathode-active material for secondary batteries)

IT 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses
(in preparation of cathode-active material for secondary batteries)

IT 554-13-2, Lithium carbonate (Li2CO3)
(in preparation of cathode-active material for secondary batteries)

IT 12597-69-2, Steel, uses
(nickel plated; cathode-active material for secondary batteries)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethylformamide, uses 109-99-9, THF, uses 617-84-5, Diethylformamide 872-50-4, N-Methylpyrrolidone, uses
(solvent; cathode-active material for secondary batteries)

IT 106107-54-4D, block
(styrene-butadiene rubber, binder; cathode-active material for secondary batteries)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS

RECORD (2 CITINGS)

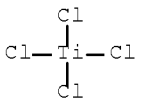
L54 ANSWER 22 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:242145 HCAPLUS Full-text
DOCUMENT NUMBER: 150:356088
TITLE: Manufacture of lithium iron phosphate cathode material for secondary lithium battery
INVENTOR(S): Ouyang, Xi; Peng, Zhongyong; Sun, Hongfei; Wan, Licheng; Li, Qi; Liu, Yuping
PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101373831	A	20090225	CN 2007-10076583	20070824
PRIORITY APPLN. INFO.:			CN 2007-10076583	20070824

ED Entered STN: 02 Mar 2009
AB The title cathode material is manufactured by: (1) preparing a mixed aqueous solution of a soluble ferrous source and a soluble phosphorus source in an inert atmospheric, and keeping pH of the mixed aqueous solution lower than 2.5-4; (2) adding ammonia water into the mixed aqueous solution in the inert atmospheric until the pH reaches 8-10 to obtain an ammonium iron phosphate precursor; (3) completely mixing ammonium iron phosphate precursor, lithium carbonate, and a carbon source, and pre-firing the obtained mixture at 300-450°C in an inert atmospheric for 3-12 h; and (4) pressing the product (obtained in the step (3)) into sheet, firing, and keeping temperature at 600-800°C for 6-14 h. This inventive method can inhibit generation of lithium phosphate impurity phase and greatly increase specific capacity of lithium iron phosphate, and has the advantages of low cost and convenient operation.
IT 1133255-14-7P
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
RN 1133255-14-7 HCAPLUS
CN Iron lithium magnesium titanium phosphate (CA INDEX NAME)

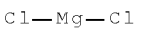
Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7550-45-0, Titanium tetrachloride, reactions 7758-94-3, Ferrous chloride 7786-30-3, Magnesium chloride, reactions
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
RN 7550-45-0 HCAPLUS
CN Titanium chloride (TiCl4) (T-4)- (CA INDEX NAME)



RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

RN 7786-30-3 HCAPLUS
CN Magnesium chloride (MgCl2) (CA INDEX NAME)



IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST carbon coated lithium iron phosphate manuf secondary battery cathode
IT Secondary batteries
(lithium; manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT Ball milling
Battery cathodes
Carbon sources, microbial
Reducing agents
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT Sulfites
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT 52767-99-4P, Ammonium iron phosphate
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT 411234-54-3P, Iron lithium phosphate
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT 223505-09-7P 1133255-14-7P
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT 7440-37-1, Argon, uses 7727-37-9, Nitrogen gas, uses
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)
IT 50-99-7, Glucose, processes 57-50-1, Sucrose, processes 5470-11-1,

Hydroxylamine hydrochloride 9004-53-9, Dextrin
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)

IT 554-13-2, Lithium carbonate 1314-56-3, Phosphorus pentoxide, reactions 1336-21-6, Ammonia water 7550-45-0, Titanium tetrachloride, reactions 7664-38-2, Phosphoric acid, reactions 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7758-94-3, Ferrous chloride 7783-28-0, Diammonium hydrogen phosphate 7786-30-3, Magnesium chloride, reactions 10045-89-3, Ammonium iron sulfate 10124-31-9, Ammonium phosphate
(manufacture of lithium iron phosphate cathode materials for secondary lithium batteries)

L54 ANSWER 23 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:206248 HCAPLUS Full-text
DOCUMENT NUMBER: 150:333861
TITLE: Lithium iron phosphate cathode material for secondary lithium battery, and its manufacture
INVENTOR(S): Ouyang, Xi; Peng, Zhongyong; Sun, Hongfei; Wan, Licheng; Li, Qi; Liu, Yuping
PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101369659	A	20090218	CN 2007-10075792	20070817
PRIORITY APPLN. INFO.:			CN 2007-10075792	20070817

ED Entered STN: 20 Feb 2009
AB The title cathode material has iron sites and phosphorus sites of Li-Fe phosphate partially substituted, and has a mol. formula of LiFe1-xMxP1-ySyO4 (M = Na or K; S = sulfur; 0 <x ≤0.5; and 0 < y ≤ 0.5). The cathode material is manufactured by mixing a Li salt, a ferrous salt, a phosphate, and a dopant M at a mol. ratio of Li:Fe:M:P:S = 1:(1-x):x:(1-y):y; ball milling for 2-12 h, pre-firing in an inert atmospheric at 200-500° for 6-10 h; and firing in an inert atmospheric at 500-800° for 8-16 h. The inventive cathode material has high-rate charge-discharge capacity, and good battery charge-discharge cycle performance.

IT 1130659-64-1P, Iron lithium sodium phosphate sulfate (Fe0.98LiNa0.02(PO4)0.98(SO4)0.02) 1130659-70-9P, Iron lithium sodium phosphate sulfate (Fe0.96LiNa0.04(PO4)0.96(SO4)0.04) 1130659-72-1P, Iron lithium sodium phosphate sulfate (Fe0.98LiNa0.02(PO4)0.96(SO4)0.04)
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)

RN 1130659-64-1 HCAPLUS
CN Iron lithium sodium phosphate sulfate (Fe0.98LiNa0.02(PO4)0.98(SO4)0.02) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	0.02	14808-79-8
O4P	0.98	14265-44-2
Na	0.02	7440-23-5

Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 1130659-70-9 HCAPLUS
CN Iron lithium sodium phosphate sulfate (Fe0.96LiNa0.04(PO4)0.96(SO4)0.04) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	0.04	14808-79-8
O4P	0.96	14265-44-2
Na	0.04	7440-23-5
Li	1	7439-93-2
Fe	0.96	7439-89-6

RN 1130659-72-1 HCAPLUS
CN Iron lithium sodium phosphate sulfate (Fe0.98LiNa0.02(PO4)0.96(SO4)0.04) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	0.04	14808-79-8
O4P	0.96	14265-44-2
Na	0.02	7440-23-5
Li	1	7439-93-2
Fe	0.98	7439-89-6

IT 1130659-67-4P, Iron lithium potassium phosphate sulfate (Fe0.98LiK0.02(PO4)0.98(SO4)0.02)
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
RN 1130659-67-4 HCAPLUS
CN Iron lithium potassium phosphate sulfate (Fe0.98LiK0.02(PO4)0.98(SO4)0.02) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	0.02	14808-79-8
O4P	0.98	14265-44-2
K	0.02	7440-09-7
Li	1	7439-93-2
Fe	0.98	7439-89-6

IT 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, reactions
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium iron sodium potassium phosphate sulfide cathode battery
IT Ball milling
Battery cathodes
Calcination
Electric properties
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
IT Secondary batteries
(lithium; compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
IT 1130659-64-1P, Iron lithium sodium phosphate sulfate (Fe0.98LiNa0.02(PO4)0.98(SO4)0.02) 1130659-70-9P, Iron lithium sodium phosphate sulfate (Fe0.96LiNa0.04(PO4)0.96(SO4)0.04) 1130659-72-1P, Iron lithium sodium phosphate sulfate (Fe0.98LiNa0.02(PO4)0.96(SO4)0.04)
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
IT 64-17-5, Ethanol, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 35296-72-1, Butanol
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
IT 1130659-67-4P, Iron lithium potassium phosphate sulfate (Fe0.98LiK0.02(PO4)0.98(SO4)0.02)
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)
IT 516-03-0, Ferrous oxalate 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 3094-87-9, Ferrous acetate 7550-35-8, Lithium bromide 7722-76-1, Ammonium dihydrogen phosphate 7772-98-7, Sodium thiosulfate 7783-18-8, Ammonium thiosulfate 7783-28-0, Diammonium hydrogen phosphate 7789-24-4, Lithium fluoride, reactions 10124-31-9, Ammonium phosphate 10294-66-3, Potassium thiosulfate
(compns. and manufacture lithium iron phosphate cathode materials for secondary lithium batteries)

L54 ANSWER 24 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:206198 HCAPLUS Full-text
DOCUMENT NUMBER: 150:333860
TITLE: Multi-doped spherical lithium iron phosphate cathode material for secondary lithium battery and its manufacture
INVENTOR(S): Li, Qi; Peng, Zhongyong; Wan, Licheng; Sun, Hongfei; Liu, Yuping; Ouyang, Xi
PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp.

CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101369657	A	20090218	CN 2007-10075736	20070813
PRIORITY APPLN. INFO.:			CN 2007-10075736	20070813

ED Entered STN: 20 Feb 2009

AB The title cathode material has a chemical formula of Li1.03-xMgx/2Fe1-yTiy/2PO4-z/2Fz/C (0< x≤ 0.1; 0< y≤ 0.1; and 0< z≤ 0.1); and is manufactured by mixing raw materials containing a Li source, a Fe source, a phosphorus source, a Ti source, and a Mg source at a mol. ratio of 0.95-1.05:0.5-1.03:1:0.01-0.1:0.01-0.1 and 8-24% carbon with 50-100% water, ball milling, and drying; calcining at 350-400°C for 3-8 h in nitrogen protective atmospheric; pressing under 500-2500 KN/cm2; calcining at 600-900°C for 3-16 h in nitrogen protective atmospheric; and cooling. The inventive cathode material has a unit capacity of larger than 160 mAh/g and a tap d. of 1.45-1.75 g/cm3. The inventive method has simple process and low cost.

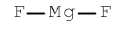
IT 1130633-96-3P
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)

RN 1130633-96-3 HCAPLUS
CN Iron lithium magnesium titanium fluoride phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	x	14762-94-8
O4P	x	14265-44-2
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7783-40-6, Magnesium fluoride 7783-63-3, Titanium tetrafluoride 7789-24-4, Lithium fluoride, reactions 7789-28-8, Ferrous fluoride
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)

RN 7783-40-6 HCAPLUS
CN Magnesium fluoride (MgF2) (CA INDEX NAME)



RN 7783-63-3 HCAPLUS
CN Titanium fluoride (TiF4), (T-4)- (9CI) (CA INDEX NAME)

RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

RN 7789-28-8 HCAPLUS
CN Iron fluoride (FeF2) (CA INDEX NAME)

IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]; B01J0019-00 [I,A]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; B01J0019-00 [I,C]; B01J0019-00 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST magnesium titanium fluorine doped spherical lithium iron phosphate; pos electrode material prepn
IT Particles
(spherical; structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT 7440-44-0P, Carbon, uses 1130633-96-3P
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT 7727-37-9, Nitrogen gas, uses
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT 57-50-1, Sucrose, reactions
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT 7782-42-5, Graphite, uses
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT 554-13-2, Lithium carbonate 1309-37-1, Iron trioxide, reactions 1309-42-8, Magnesium hydroxide 1309-48-4, Magnesium oxide, reactions 1310-66-3, Lithium hydroxide monohydrate 1317-61-9, Ferroferric oxide, reactions 1344-55-4, Titanium trioxide 1345-25-1, Ferrous oxide, reactions 6047-25-2, Ferrous oxalate dihydrate 7439-95-4, Magnesium, reactions 7722-76-1, Ammonium dihydrogen phosphate 7783-28-0, Diammonium hydrogen phosphate 7783-40-6, Magnesium fluoride 7783-63-3, Titanium tetrafluoride 7789-24-4, Lithium fluoride, reactions 7789-28-8,

Ferrous fluoride 7790-69-4, Lithium nitrate 10124-31-9, Ammonium phosphate 10377-52-3, Lithium phosphate 12137-20-1, Titanium monoxide 13453-80-0, Lithium dihydrogen phosphate 13463-67-7, Titanium dioxide, reactions 14013-86-6, Ferrous nitrate 14104-77-9, Iron nitrate 15609-80-0, Magnesium dihydrogen phosphate dihydrate 33943-39-4, Dilithium hydrogen phosphate
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate
(structure and manufacture of multi-doped lithium iron phosphate cathode materials for secondary lithium batteries)

L54 ANSWER 25 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:182461 HCAPLUS Full-text
DOCUMENT NUMBER: 150:286783
TITLE: Boron-containing lithium iron phosphate/carbon composite cathode material for secondary lithium battery and its manufacture
INVENTOR(S): Gong, Jinbao; Yu, Aishui; Dai, Kangquan; Wang, Boliang; Wang, Yetao; Lu, Yuexing; Lu, Yuchi; Xiao, Zhangxing
PATENT ASSIGNEE(S): Hangzhou Sainuosuoou Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 25pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101364643	A	20090211	CN 2008-10120092	20080718
PRIORITY APPLN. INFO.:			CN 2008-10120092	20080718

ED Entered STN: 16 Feb 2009
AB The title cathode material has a formula of $Li_{1-x}M_xFe_{1-y}N_yP_{1-z}Si_zO_4 \cdot \xi B_2O_3/C$ or $Li_{1-x}M_xFe_{1-y}N_yP_{1-z}Si_zO_4 \cdot \zeta LiBO_2/C$ (M = metal element doped in bulk phase for substituting Li position and selected from ≥1 of Mg, Ca, Zn, Al, Cr, V, Ti, Zr and Nb; x = 0-0.1; N = metal element doped in bulk phase for substituting Fe position and selected from ≥1 of Li, Cu, Mg, Ca, Mn, Ni, Co, Zn, Al, Cr, V, Ti, Zr, and Nb; y = 0-0.1; Si is doped in bulk phase for substituting P; z = 0-0.5; ξ = 0.006-0.25; and ζ = 0.01-0.5); where B_2O_3 and $LiBO_2$ exist on the surface of the lithium iron phosphate in the amorphous state, and mix with a conductive carbon material; and the carbon material is 0.1-10 weight% of the composite material. A method for manufacturing the above composite cathode material is also disclosed.
IT 714249-17-9P, Iron lithium phosphate ($FeLi_{0.98}(PO_4)$)
714249-20-4P, Iron lithium phosphate ($FeLi_{0.99}(PO_4)$)
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
RN 714249-17-9 HCAPLUS
CN Iron lithium phosphate ($FeLi_{0.98}(PO_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2

Li	0.98	7439-93-2
Fe	1	7439-89-6

RN 714249-20-4 HCAPLUS
CN Iron lithium phosphate (FeLi0.99(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.99	7439-93-2
Fe	1	7439-89-6

IT 7789-24-4, Lithium fluoride, reactions
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; B01J0019-00 [I,A]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; B01J0019-00 [I,C]; B01J0019-00 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium iron phosphate carbon boron secondary battery cathode manuf
IT Nanotubes
(carbon; compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT Ball milling
Battery cathodes
Particle size
Sintering
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT Carbon black, uses
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT Borates
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT Secondary batteries
(lithium; compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT 1303-86-2P, Boron trioxide, uses 13453-69-5P, Lithium metaborate
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium

batteries)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 714249-17-9P , Iron lithium phosphate (FeLi0.98(PO4)) 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT 7440-44-0P, Carbon, uses
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT 10043-35-3, Boric acid (H3BO3), uses
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)
IT 50-99-7, Glucose, reactions 516-03-0, Ferrous oxalate 546-89-4, Lithium acetate 554-13-2, Lithium carbonate 1309-37-1, Ferric oxide, reactions 1310-65-2, Lithium hydroxide 1317-61-9, Ferroferric oxide, reactions 1345-25-1, Ferrous oxide, reactions 2944-66-3, Ferric oxalate 7664-38-2, Phosphoric acid, reactions 7699-43-6, Zirconium oxychloride (ZrOCl2) 7722-76-1, Ammonium dihydrogen phosphate 7783-28-0, Diammonium hydrogen phosphate 7789-24-4, Lithium fluoride, reactions 10045-86-0, Ferric phosphate 10377-52-3, Lithium phosphate 13453-80-0, Lithium dihydrogen phosphate 14940-41-1, Ferrous phosphate
(compns. and manufacture of boron-containing lithium iron phosphate/carbon composite cathode materials for secondary lithium batteries)

L54 ANSWER 26 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:37812 HCAPLUS Full-text
DOCUMENT NUMBER: 150:172401
TITLE: Manufacture of multi-lattice-site-doped lithium iron phosphate cathode material for secondary lithium battery and its application
INVENTOR(S): Luo, Shaohua; Zhuge, Fuchang
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 17pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101339994	A	20090107	CN 2008-10146486	20080901
PRIORITY APPLN. INFO.:			CN 2008-10146486	20080901

ED Entered STN: 12 Jan 2009
AB The title cathode material contains at least two of lithium, iron, phosphorus and oxygen sites in the LiFePO4 lattice doped simultaneously; and has a formula of Li1-xAxFe1-yByP1-zCzO4DVFd, wherein A represents lithium-site doping element including lanthanide element (except for promethium), which comes from corresponding lanthanide element oxide, hydroxide, chloride, etc.; x = 0-0.05; B represents iron-site doping element including Mn, Co, Ni or lanthanide element except for promethium, which comes from Mn, Co, Ni or lanthanide element oxide, hydroxide, chloride, etc.; y = 0-0.05; C represents phosphorus-site doping element including B, W, S or Si, which comes from sulfur, boric acid, tungstic acid, thiourea, silica gel, etc.; z = 0-0.5; D

represents oxygen-site doping element including oxygen or halogen group element, which comes from urea, sulfur, ammonium chloride, ammonium fluoride, etc., and δ = 0-2; and at least two of x, y, z and δ cannot be 0 at the same time. The cathode material is manufactured by mixing doping materials and matrix materials in a solvent, ball milling, drying at 40-70°C, pre-firing at 400-550°C in an inert or reducing atmospheric for 2-10 h, secondarily ball milling and drying, and secondarily firing at 550-850°C in an inert or reducing atmospheric

IT 1104836-13-6P 1104836-15-8P
1104836-33-0P 1104836-35-2P, Cobalt iron lithium phosphate sulfide (Co0.02Fe0.98Li(PO4)S0.4)
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

RN 1104836-13-6 HCAPLUS

CN Cobalt iron lanthanum lithium borate oxide phosphate sulfide (Co0.01Fe0.99La0.01Li0.99(BO3)0.02O0.02(PO4)0.98S0.4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.02	17778-80-2
O4P	0.98	14265-44-2
BO3	0.02	14213-97-9
S	0.4	7704-34-9
Co	0.01	7440-48-4
Li	0.99	7439-93-2
La	0.01	7439-91-0
Fe	0.99	7439-89-6

RN 1104836-15-8 HCAPLUS

CN Cerium iron lithium tungsten oxide phosphate (Ce0.02Fe0.98LiW0.1O0.4(PO4)0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	0.9	14265-44-2
Ce	0.02	7440-45-1
W	0.1	7440-33-7
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 1104836-33-0 HCAPLUS

CN Dysprosium europium iron lithium borate oxide phosphate (Dy0.02Eu0.03Fe0.98Li0.97(BO3)0.3O0.3(PO4)0.7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.3	17778-80-2
O4P	0.7	14265-44-2
BO3	0.3	14213-97-9
Eu	0.03	7440-53-1
Li	0.97	7439-93-2
Fe	0.98	7439-89-6
Dy	0.02	7429-91-6

RN 1104836-35-2 HCAPLUS

CN Cobalt iron lithium phosphate sulfide (Co0.02Fe0.98Li(PO4)S0.4) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
S	0.4	7704-34-9
Co	0.02	7440-48-4
Li	1	7439-93-2
Fe	0.98	7439-89-6

IT 1104836-19-2P 1104836-22-7P
1104836-25-0P, Iron lithium nickel fluoride phosphate (Fe0.97LiNi0.03F0.3(PO4)) 1104836-28-3P, Iron lithium samarium phosphate silicate (FeLi0.98Sm0.02(PO4)0.8(SiO4)0.2)
1104836-31-8P, Iron lithium chloride phosphate sulfate (FeLiCl0.8(PO4)0.9(SO4)0.1) 1104836-37-4P
1104836-39-6P 1104836-42-1P
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

RN 1104836-19-2 HCAPLUS
CN Europium iron lithium manganese phosphate (Eu0.04Fe0.98Li0.96Mn0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Eu	0.04	7440-53-1
Mn	0.02	7439-96-5
Li	0.96	7439-93-2
Fe	0.98	7439-89-6

RN 1104836-22-7 HCAPLUS
CN Iron lithium praseodymium nitride phosphate (FeLi0.99Pr0.01N1.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1.5	17778-88-0
O4P	1	14265-44-2
Pr	0.01	7440-10-0
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 1104836-25-0 HCAPLUS
CN Iron lithium nickel fluoride phosphate (Fe0.97LiNi0.03F0.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	0.3	14762-94-8
O4P	1	14265-44-2
Ni	0.03	7440-02-0
Li	1	7439-93-2
Fe	0.97	7439-89-6

RN 1104836-28-3 HCAPLUS
CN Iron lithium samarium phosphate silicate (FeLi0.98Sm0.02(PO4)0.8(SiO4)0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.2	17181-37-2
O4P	0.8	14265-44-2
Sm	0.02	7440-19-9
Li	0.98	7439-93-2
Fe	1	7439-89-6

RN 1104836-31-8 HCAPLUS
CN Iron lithium chloride phosphate sulfate (FeLiCl0.8(PO4)0.9(SO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cl	0.8	22537-15-1
O4S	0.1	14808-79-8
O4P	0.9	14265-44-2
Li	1	7439-93-2
Fe	1	7439-89-6

RN 1104836-37-4 HCAPLUS
CN Iron lithium thulium tungsten nitride oxide phosphate (FeLi0.98Tm0.02W0.06N0.5O0.24(PO4)0.94) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	0.5	17778-88-0
O	0.24	17778-80-2
O4P	0.94	14265-44-2
W	0.06	7440-33-7
Tm	0.02	7440-30-4
Li	0.98	7439-93-2
Fe	1	7439-89-6

RN 1104836-39-6 HCAPLUS
CN Iron lithium manganese nitride phosphate silicate (Fe0.98LiMn0.02N1.5(PO4)0.75(SiO4)0.25) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1.5	17778-88-0
O4Si	0.25	17181-37-2
O4P	0.75	14265-44-2
Mn	0.02	7439-96-5
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 1104836-42-1 HCAPLUS
CN Cerium gadolinium iron lithium manganese tungsten borate fluoride oxide phosphate (Ce0.05Gd0.01Fe0.98Li0.95Mn0.01W0.1(BO3)0.1F0.4O0.5(PO4)0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.5	17778-80-2
F	0.4	14762-94-8
O4P	0.8	14265-44-2
BO3	0.1	14213-97-9
Gd	0.01	7440-54-2
Ce	0.05	7440-45-1
W	0.1	7440-33-7
Mn	0.01	7439-96-5
Li	0.95	7439-93-2
Fe	0.98	7439-89-6

IT 7646-79-9, Cobalt chloride (CoCl2), reactions
7718-54-9, Nickel chloride, reactions 7758-94-3,
Ferrous chloride 7773-01-5, Manganese chloride
10025-74-8, Dysprosium chloride 10361-79-2,
Praseodymium chloride 13537-18-3, Thulium chloride
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

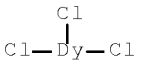
RN 7646-79-9 HCAPLUS
CN Cobalt chloride (CoCl2) (CA INDEX NAME)

RN 7718-54-9 HCAPLUS
CN Nickel chloride (NiCl2) (CA INDEX NAME)

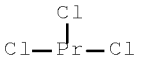
RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

RN 7773-01-5 HCAPLUS
CN Manganese chloride (MnCl2) (CA INDEX NAME)

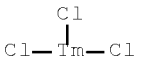
RN 10025-74-8 HCAPLUS
CN Dysprosium chloride (DyCl3) (CA INDEX NAME)



RN 10361-79-2 HCAPLUS
CN Praseodymium chloride (PrCl3) (CA INDEX NAME)



RN 13537-18-3 HCAPLUS
CN Thulium chloride (TmCl3) (CA INDEX NAME)



IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST multi site doped lithium iron phosphate cathode secondary battery
IT Ball milling
Battery cathodes
Calcination
Secondary batteries
Solid phase synthesis
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT Silica gel, reactions
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT Fluoropolymers, uses
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT Polyamides, uses
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)
IT Polyesters, uses

(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

IT Polyurethanes, uses
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

IT 1104836-13-6P 1104836-15-8P 1104836-33-0P 1104836-35-2P, Cobalt iron lithium phosphate sulfide (Co0.02Fe0.98Li(PO4)S0.4)
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

IT 1104836-19-2P 1104836-22-7P 1104836-25-0P, Iron lithium nickel fluoride phosphate (Fe0.97LiNi0.03F0.3(PO4)) 1104836-28-3P, Iron lithium samarium phosphate silicate (FeLi0.98Sm0.02(PO4)0.8(SiO4)0.2) 1104836-31-8P, Iron lithium chloride phosphate sulfate (FeLiCl0.8(PO4)0.9(SO4)0.1) 1104836-37-4P 1104836-39-6P 1104836-42-1P
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

IT 62-56-6, Thiourea, reactions 121-43-7, Trimethyl borate 516-03-0, Ferrous oxalate 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1303-86-2, Boron oxide, reactions 1310-65-2, Lithium hydroxide 1310-66-3, Lithium hydroxide monohydrate 1313-82-2, Sodium sulfide, reactions 1313-99-1, Nickel oxide, reactions 3094-87-9, Ferrous acetate 3333-67-3, Nickel carbonate 5187-83-7 5965-39-9, Cobalt oxalate tetrahydrate 6047-25-2, Ferrous oxalate dihydrate 6451-21-4 6556-16-7, Manganese oxalate dihydrate 7542-09-8, Cobalt carbonate 7646-79-9, Cobalt chloride (CoCl2), reactions 7718-54-9, Nickel chloride, reactions 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7758-94-3 , Ferrous chloride 7773-01-5, Manganese chloride 7782-63-0, Ferrous sulfate heptahydrate 7783-28-0, Diammonium phosphate 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 7791-13-1 10025-74-8, Dysprosium chloride 10043-35-3, Boric acid (H3BO3), reactions 10099-67-9, Lutetium nitrate 10124-31-9, Ammonium phosphate 10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate 10168-81-7, Gadolinium nitrate 10361-79-2, Praseodymium chloride 10377-66-9, Manganese nitrate 11104-61-3, Cobalt oxide 11105-11-6, Tungstic acid 11129-60-5, Manganese oxide 11140-77-5, Ammonium tungstate 12054-48-7, Nickel hydroxide 12060-58-1, Samarium oxide 12135-76-1, Ammonium sulfide 12626-88-9, Manganese hydroxide 12672-51-4, Cobalt hydroxide 13138-45-9, Nickel nitrate 13478-00-7, Nickel nitrate hexahydrate 13537-18-3, Thulium chloride 13590-82-4 14940-41-1, Ferrous phosphate 17375-37-0, Manganese carbonate
(compns. and manufacture of multi-lattice-site-doped lithium iron phosphate cathode materials for secondary lithium batteries)

IT 105-58-8, Ethyl carbonate 616-38-6, Dimethyl carbonate 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 9003-07-0, Polypropylene 12597-68-1, Stainless steel, uses 15723-40-7, Agate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Polyvinylidene difluoride
(compns. and manufacture of multi-lattice-site-doped lithium iron

phosphate cathode materials for secondary lithium batteries)

L54 ANSWER 27 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:1450936 HCAPLUS Full-text
DOCUMENT NUMBER: 150:8478
TITLE: Preparation of lithium iron phosphate as a positive electrode active material for a lithium ion secondary battery
INVENTOR(S): Chen, Xiaoyong; Xu, Chaqing; Jia, Wenwen
PATENT ASSIGNEE(S): BYD Company Limited, Peop. Rep. China
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2008145034	A1	20081204	WO 2008-CN70656	20080401
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
CN 101314463	A	20081203	CN 2007-10103095	20070528
CN 101378125	A	20090304	CN 2007-10147590	20070828
CN 101447564	A	20090603	CN 2007-10187560	20071126
EP 2125615	A1	20091202	EP 2008-715388	20080401
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR				
KR 2009125278	A	20091204	KR 2009-7022239	20080401
JP 2010528410	T	20100819	JP 2010-508689	20080401
CN 101568489	A	20091028	CN 2008-80001173	20090522
US 20100102270	A1	20100429	US 2009-593424	20090928

PRIORITY APPLN. INFO.:

CN 2007-10103095	A	20070528
CN 2007-10147590	A	20070828
CN 2007-10187560	A	20071126
WO 2008-CN70656	W	20080401

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 04 Dec 2008
AB Lithium iron phosphate as a pos. electrode active material for a lithium ion secondary battery is prepared by drying and sintering a mixture containing a lithium source, ferric oxide, phosphoric acid, a carbon source, and a solvent, in which the solvent is water and/or water soluble organic solvent. The mixture can further contain a nitrate of a metal M, such as Mn, Co, Ni, Ca,

Mg, Zn, Ti, Nb, Y, Mo, Cu, Au, Ga, Zr, V, or Al, and the molar ratio of M to Fe is (0.005-0.25):1. The mixture can contain a halogen compound, such as LiF, LiCl, LiBr, or LiI, and the molar ratio of halogen in the halogen compound to Fe is (0.005-0.25):1. The lithium iron phosphate prepared has a small particle size and uniform particle size distribution, and the battery prepared from the lithium iron phosphate has a high initial discharge specific capacity, and good large-current discharge property and cycle performance.

IT 1087323-08-7P, Iron lithium nickel zinc phosphate
1087323-09-8P 1087323-10-1P
(anode material; preparation of lithium iron phosphate as pos. active electrode material for lithium ion secondary battery)

RN 1087323-08-7 HCAPLUS
CN Iron lithium nickel zinc phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Zn	x	7440-66-6
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

RN 1087323-09-8 HCAPLUS
CN Iron lithium nickel titanium zinc phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Zn	x	7440-66-6
Ti	x	7440-32-6
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

RN 1087323-10-1 HCAPLUS
CN Iron lithium magnesium nickel zinc phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Zn	x	7440-66-6
Ni	x	7440-02-0
Mg	x	7439-95-4
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7447-41-8, Lithium chloride, processes 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, processes 10377-51-2, Lithium iodide
(preparation of lithium iron phosphate as pos. active electrode material for lithium ion secondary battery)

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

Br—Li

RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

I—Li

IPCI C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-58 [I,A]; H01M0010-40 [I,A]; H01M0010-36 [I,C*]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-02 [I,C*]; H01M0004-136 [I,A]; H01M0004-1397 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST lithium iron phosphate pos electrode prepn lithium secondary battery
IT Battery cathodes
Electric capacitance
Particle size
Particle size distribution
(preparation of lithium iron phosphate as pos. active electrode material for lithium ion secondary battery)
IT 15365-14-7P, Iron lithium phosphate felipo4 1087323-08-7P, Iron lithium nickel zinc phosphate 1087323-09-8P 1087323-10-1P
(anode material; preparation of lithium iron phosphate as pos. active electrode material for lithium ion secondary battery)
IT 7782-42-5, Graphite, uses
(cathode material; preparation of lithium iron phosphate as pos. active electrode material for lithium ion secondary battery)
IT 7447-41-8, Lithium chloride, processes 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, processes 10377-51-2, Lithium iodide
(preparation of lithium iron phosphate as pos. active electrode material for lithium ion secondary battery)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS

RECORD (1 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 28 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:1021818 HCAPLUS Full-text
DOCUMENT NUMBER: 149:336092
TITLE: Method for preparing basic ammonium iron phosphate, method for preparing iron phosphate, and method for preparing lithium ferrous phosphate
INVENTOR(S): Cheng, Tangli
PATENT ASSIGNEE(S): BYD Company Limited, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 16pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

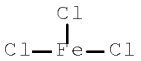
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101244813	A	20080820	CN 2007-10073389	20070215
PRIORITY APPLN. INFO.:			CN 2007-10073389	20070215

ED Entered STN: 25 Aug 2008
AB The title basic ammonium iron phosphate (tap d. 1.3-1.6 g/mL; average particle size 10-20 μm) has a formula of $NH_4Fe_2(OH)(PO_4)_2 \cdot nH_2O$ (n = 0-2). The title method for preparing basic ammonium iron phosphate comprises mixing an aqueous solution of iron salt (mixture of ferric salt and ferrous salt), an aqueous solution of P source, and aqueous ammonia, stirring and reacting at 20-60°C and pH 3-7 for 4-16 h, and overflowing to obtain precipitate The title method for preparing iron phosphate ($FePO_4$) with high tap d. comprises filtering $NH_4Fe_2(OH)(PO_4)_2 \cdot nH_2O$, washing, drying at 120-180°C for 2-6 h, and calcining at 550-700°C for 4-6 h. The title method for preparing lithium ferrous phosphate ($LiFePO_4$) comprises mixing $FePO_4$, lithium salt, carbon source and dopant, ball-milling, heating to 600-800°C at a rate of 1-3°C/min, sintering at 600-800°C for 8-24 h in nitrogen, inert gas (helium or argon) or reducing gas (hydrogen or CO), and cooling to obtain lithium ferrous phosphate with high tap d. and high specific capacity.
IT 170720-39-5P, Ammonium iron hydroxide phosphate ($(NH_4)Fe_2(OH)(PO_4)_2$)
(method for preparing basic ammonium iron phosphate, method for preparing iron phosphate, and method for preparing lithium ferrous phosphate)
RN 170720-39-5 HCAPLUS
CN Ammonium iron hydroxide phosphate ($(NH_4)Fe_2(OH)(PO_4)_2$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
H4N	1	14798-03-9
HO	1	14280-30-9
O4P	2	14265-44-2
Fe	2	7439-89-6

IT 7705-08-0P, Ferric chloride, preparation
7758-94-3P, Ferrous chloride
(method for preparing basic ammonium iron phosphate, method for preparing iron phosphate, and method for preparing lithium ferrous phosphate)

RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

IPCI C01B0025-45 [I,A]; C01B0025-37 [I,A]; C01B0025-00 [I,C*]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; C01B0025-37 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT Ball milling
Battery cathodes
Calcination
Cleaning
Cooling
Electric properties
Filtration
Heating
Particle size
Sintering
(method for preparing basic ammonium iron phosphate, method for preparing iron phosphate, and method for preparing lithium ferrous phosphate)
IT 10045-86-0P, Ferric phosphate 15365-14-7P, Iron Lithium phosphate FeLiPO4 170720-39-5P, Ammonium iron hydroxide phosphate ((NH4)Fe2(OH)(PO4)2)
(method for preparing basic ammonium iron phosphate, method for preparing iron phosphate, and method for preparing lithium ferrous phosphate)
IT 516-03-0P, Ferrous oxalate 1834-30-6P, Ferric acetate 2944-66-3P, Ferric oxalate 3094-87-9P, Ferrous acetate 7705-08-0P, Ferric chloride, preparation 7720-78-7P, Ferrous sulfate 7758-94-3P, Ferrous chloride 10028-22-5P, Ferric sulfate 10421-48-4P, Ferric nitrate 14013-86-6P, Ferrous nitrate
(method for preparing basic ammonium iron phosphate, method for preparing iron phosphate, and method for preparing lithium ferrous phosphate)

L54 ANSWER 29 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:843351 HCAPLUS Full-text
DOCUMENT NUMBER: 149:227142
TITLE: Method for synthesizing LixMy(PO4)z compounds under electron beam irradiation
INVENTOR(S): Zhao, Bing; Jiao, Zheng; Wu, Minghong; Yan, Jing; Zhong, Mingyang; He, Yaqin; Jiang, Yong; Sun, Yufei; Wang, Song
PATENT ASSIGNEE(S): Shanghai University, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 6pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent

LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101214942	A	20080709	CN 2008-10032410	20080108
PRIORITY APPLN. INFO.:			CN 2008-10032410	20080108

ED Entered STN: 14 Jul 2008
AB The title compds. have a formula of LixMy(PO4)z, wherein M is one or two of Fe, Co, Ni, Mn, V, Cu, Ti, Cr, Mg and Zn. The compds. are synthesized by the following steps of: (1) weighing soluble M salt and phosphorus-containing compound, dissolving in deionized water, adding proper complexing agent, and then adding soluble Li salt under stirring, (2) adding suitable dilute base solution to adjust pH to 6.5-7, and ultrasonic-vibrating for 5-10 min, (3) electron beam-irradiating at 20-40 Mrad in an electron accelerator (power 2.5 MeV and current 40 mA), (4) washing, centrifugating, and repeating many times to remove unreacted ion and complexing agent, (5) vacuum-drying, and (6) thermally treating in a tubular furnace at 400-600° for 5-10 h, and naturally cooling to obtain the final product with particle size of 50-100 nm. The concentration ratio of complexing agent to M ion is (0.1-1):1. The M salt is M nitrate or sulfate. The P-containing compound is phosphoric acid, diammonium hydrogen phosphate or ammonium dihydrogen phosphate. The Li salt is lithium hydroxide, lithium chloride, lithium sulfate or lithium carbonate. The complexing agent is disodium ethylenediaminetetraacetate, citric acid or aminotriacetic acid. The product can be used to prepare cathode materials of lithium ion batteries.
IT 478819-84-0P, Iron lithium magnesium phosphate (FeLi0.99Mg0.01(PO4))
(method for synthesizing LixMy(PO4)z compds. under electron beam irradiation)
RN 478819-84-0 HCAPLUS
CN Iron lithium magnesium phosphate (FeLi0.99Mg0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.01	7439-95-4
Li	0.99	7439-93-2
Fe	1	7439-89-6

IT 7447-41-8, Lithium chloride, reactions
(method for synthesizing LixMy(PO4)z compds. under electron beam irradiation)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

IPCI C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-58 [N,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 49-3 (Industrial Inorganic Chemicals)

Section cross-reference(s): 52
ST complex lithium phosphate prepn electron beam irradn; magnesium zinc phosphate electron beam irradn cathode battery
IT Battery cathodes
(method for synthesizing LixMy(PO4)z compds. under electron beam irradiation)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 84159-18-2P, Lithium vanadium phosphate (Li3V2(PO4)3) 478819-84-0P, Iron lithium magnesium phosphate (FeLi0.99Mg0.01(PO4))
(method for synthesizing LixMy(PO4)z compds. under electron beam irradiation)
IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 7447-41-8, Lithium chloride, reactions 7664-38-2, Phosphoric acid, reactions 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7783-28-0, Diammonium hydrogen phosphate 7803-55-6, Ammonium vanadate 10377-48-7, Lithium sulfate 10377-60-3, Magnesium nitrate 10421-48-4, Ferric nitrate
(method for synthesizing LixMy(PO4)z compds. under electron beam irradiation)

L54 ANSWER 30 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:816094 HCAPLUS Full-text
DOCUMENT NUMBER: 149:204396
TITLE: Preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped lithium iron(II) phosphate for use in lithium ion batteries
INVENTOR(S): Cao, Wenyu; Zhang, Shuiyuan; Xiao, Feng
PATENT ASSIGNEE(S): BYD Company Limited, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 26pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101209820	A	20080702	CN 2006-10167328	20061227
PRIORITY APPLN. INFO.:			CN 2006-10167328	20061227

ED Entered STN: 08 Jul 2008
AB Metal-doped ferrous oxalate dihydrate is prepared by contacting a ferrous salt (ferrous sulfate, ferrous chloride and/or ferrous acetate) and a soluble nonferrous metal salt with an oxalate salt till the pH of the mixed solution is 3-6. The nonferrous metal salt can be a sulfate, nitrate and/or chloride of a IIA metal, IIIA metal, IVA metal, such as magnesium sulfate, aluminum sulfate, or zirconium sulfate. The oxalate can be sodium oxalate, potassium oxalate, ammonium oxalate, and/or lithium oxalate. The lithium iron phosphate is prepared by sintering a mixture of a lithium source, phosphorus source and the iron source material at 650-850° for 8-40 h in an inert gas or reducing gas atm; followed by cooling. The lithium source can be lithium hydroxide, lithium carbonate, or lithium acetate. The phosphorus source can be ammonium phosphate, ammonium hydrogen phosphate, or lithium phosphate. The mol. ratio of lithium to iron to phosphorus is (1-1.07):1:1. The obtained lithium iron(II) phosphate has a small particle size, uniform particles, good conductivity and electrochem. properties.
IT 912841-83-9P, Cobalt iron lithium phosphate
912841-84-0P, Iron lithium nickel phosphate
(preparation of metal-doped ferrous oxalate dihydrate as iron source

material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

RN 912841-83-9 HCAPLUS
CN Cobalt iron lithium phosphate (CA INDEX NAME)

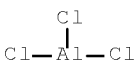
Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Co	x	7440-48-4
Li	x	7439-93-2
Fe	x	7439-89-6

RN 912841-84-0 HCAPLUS
CN Iron lithium nickel phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7446-70-0, Aluminum chloride, reactions 7646-79-9, Cobaltous chloride, reactions 7718-54-9, Nickelous chloride, reactions 7758-94-3, Ferrous chloride 7772-99-8, Stannous chloride, reactions 7773-01-5, Manganous chloride 7786-30-3, Magnesium chloride, reactions 10043-52-4, Calcium chloride, reactions 10361-37-2, Barium chloride, reactions 10476-85-4, Strontium chloride
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

RN 7446-70-0 HCAPLUS
CN Aluminum chloride (AlCl3) (CA INDEX NAME)



RN 7646-79-9 HCAPLUS
CN Cobalt chloride (CoCl2) (CA INDEX NAME)

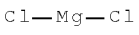
RN 7718-54-9 HCAPLUS
CN Nickel chloride (NiCl2) (CA INDEX NAME)

RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

RN 7772-99-8 HCAPLUS
CN Tin chloride (SnCl2) (CA INDEX NAME)

RN 7773-01-5 HCAPLUS
CN Manganese chloride (MnCl2) (CA INDEX NAME)

RN 7786-30-3 HCAPLUS
CN Magnesium chloride (MgCl2) (CA INDEX NAME)



RN 10043-52-4 HCAPLUS
CN Calcium chloride (CaCl2) (CA INDEX NAME)

RN 10361-37-2 HCAPLUS
CN Barium chloride (BaCl2) (CA INDEX NAME)

RN 10476-85-4 HCAPLUS
CN Strontium chloride (SrCl2) (CA INDEX NAME)

Cl—Sr—Cl

IPCI C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-58 [N,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST metal doped ferrous oxalate dihydrate prepn lithium iron phosphate; secondary lithium battery cathode doped lithium iron phosphate
IT Battery cathodes
Electric capacitance
Electric conductivity
Particle size
Particle size distribution
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)
IT 554453-36-0P, Aluminum iron lithium phosphate 554453-37-1P, Iron lithium zirconium phosphate 554453-38-2P, Iron lithium manganese phosphate 554453-42-8P, Iron lithium magnesium phosphate 912841-83-9P, Cobalt iron lithium phosphate 912841-84-0P, Iron lithium nickel phosphate
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)
IT 62-76-0, Sodium oxalate 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 583-52-8, Potassium oxalate 1113-38-8, Ammonium oxalate 1310-65-2, Lithium hydroxide 3094-87-9, Ferrous acetate 7446-70-0, Aluminum chloride, reactions 7646-79-9, Cobaltous chloride, reactions 7718-54-9, Nickelous chloride, reactions 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7733-02-0, Zinc sulfate 7758-94-3, Ferrous chloride 7772-99-8, Stannous chloride, reactions 7773-01-5, Manganous chloride 7782-63-0, Ferrous sulfate heptahydrate 7783-28-0, Ammonium hydrogen phosphate 7784-31-8, Aluminum sulfate octadecahydrate 7785-87-7, Manganous sulfate 7786-30-3, Magnesium chloride, reactions 7790-69-4, Lithium nitrate 10034-99-8, Magnesium sulfate heptahydrate 10043-52-4, Calcium chloride, reactions 10099-59-9, Lanthanum nitrate 10101-97-0, Nickel sulfate hexahydrate 10124-43-3, Cobaltous sulfate 10361-37-2, Barium chloride, reactions 10361-65-6, TriAmmonium phosphate 10377-52-3, Lithium phosphate 10377-60-3, Magnesium nitrate 10476-85-4, Strontium chloride 13453-80-0, Lithium dihydrogen phosphate 13473-90-0, Aluminum nitrate 13746-89-9, Zirconium nitrate 33943-39-4, DiLithium hydrogen phosphate
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

L54 ANSWER 31 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:778038 HCAPLUS Full-text

DOCUMENT NUMBER: 149:108256
TITLE: Mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries
INVENTOR(S): Nazar, Linda Faye; Makahnouk, Michael; Ellis, Brian; Toghill, Kathryn; Makimura, Yoshinari
PATENT ASSIGNEE(S): Can.
SOURCE: U.S. Pat. Appl. Publ., 31pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 20080153002	A1	20080626	US 2007-946038		20071127
PRIORITY APPLN. INFO.:			US 2006-861058P	P	20061127

ED Entered STN: 27 Jun 2008

AB LixNa2-xFePO4F with 0<x≤2 was prepared by exchanging Li ions for Na ions in Na2FePO4F. The compound may be used as a cathode material for a Li ion battery. The battery may be comprised of an electrode active material Li2FePO4F, an anode and an electrolyte. Na2FePO4F may be synthesized by a flux reaction. Microcryst. Na2FePO4F may be synthesized by a solution method. Na2FePO4F may be used as a cathode material for a Li ion battery and may be C composite coated.

IT 7550-35-8, Lithium bromide (LiBr) 10377-51-2, Lithium iodide (LiI)
(in preparation of mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

IT 7681-49-4, Sodium fluoride (NaF), reactions
(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)
RN 7681-49-4 HCAPLUS
CN Sodium fluoride (NaF) (CA INDEX NAME)

IT 1034495-99-2P, Iron lithium sodium fluoride phosphate (Fe(Li,Na)2F(PO4))
(mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
RN 1034495-99-2 HCAPLUS
CN Iron lithium sodium fluoride phosphate (Fe(Li,Na)2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	0 - 2	7440-23-5
Li	0 - 2	7439-93-2
Fe	1	7439-89-6

IT 418771-26-3P, Iron sodium fluoride phosphate (FeNaF(PO4))
477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
958636-40-3P, Iron sodium fluoride phosphate (FeNa1.5F(PO4))
1034496-00-8P, Iron sodium fluoride phosphate
1034496-02-0P, Iron sodium fluoride phosphate (FeNa1.25F(PO4))
1034496-03-1P, Iron sodium fluoride phosphate (FeNa1.75F(PO4))
(sodium iron fluorophosphate cathode materials for lithium-ion batteries)
RN 418771-26-3 HCAPLUS
CN Iron sodium fluoride phosphate (FeNaF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1	7440-23-5
Fe	1	7439-89-6

RN 477779-90-1 HCAPLUS
CN Iron sodium fluoride phosphate (FeNa2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Fe	1	7439-89-6

RN 958636-40-3 HCAPLUS
CN Iron sodium fluoride phosphate (FeNa1.5F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1.5	7440-23-5
Fe	1	7439-89-6

RN 1034496-00-8 HCAPLUS
CN Iron sodium fluoride phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	x	14762-94-8
O4P	x	14265-44-2
Na	x	7440-23-5
Fe	x	7439-89-6

RN 1034496-02-0 HCAPLUS
CN Iron sodium fluoride phosphate (FeNa1.25F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1.25	7440-23-5
Fe	1	7439-89-6

RN 1034496-03-1 HCAPLUS
CN Iron sodium fluoride phosphate (FeNa1.75F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1.75	7440-23-5
Fe	1	7439-89-6

INCL 429221000; 423301000; 252182100
IPCI H01M0004-52 [I,A]; C01B0025-10 [I,A]; C01B0025-00 [I,C*]
IPCR C01B0025-00 [I,C]; C01B0025-10 [I,A]; H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-0525 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
NCL 429/221.000; 252/182.100; 423/301.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 78
ST lithium sodium iron fluorophosphate cathode lithium battery
IT Secondary batteries
(lithium; mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT Battery cathodes
(mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT Crystal structure
(of sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 7440-44-0, Carbon, uses
(carbon-coated lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 7550-35-8, Lithium bromide (LiBr) 10377-51-2, Lithium iodide (LiI)
(in preparation of mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 107-21-1, Ethylene glycol, uses 110-71-4, DME 554-95-0, 1,3,5-Benzenetricarboxylic acid

(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 7727-21-1 13826-86-3 14635-75-7
(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 127-09-3, Sodium acetate 144-55-8, Sodium carbonate (NaHCO3), reactions 497-19-8, Sodium carbonate (Na2CO3), reactions 1345-25-1, Ferrous oxide, reactions 3094-87-9, Iron(II) acetate 6047-25-2, Iron oxalate (FeC2O4) dihydrate 7664-38-2, Phosphoric acid, reactions 7681-49-4, Sodium fluoride (NaF), reactions 7722-76-1, Ammonium phosphate (NH4H2PO4) 10045-89-3 10049-21-5 12191-70-7, Sodium fluoride metaphosphate (Na2F(PO3)) 13011-54-6, Ammonium sodium phosphate ((NH4)NaHPO4)
(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 1034495-99-2P, Iron lithium sodium fluoride phosphate (Fe(Li,Na)2F(PO4))
(mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 418771-26-3P, Iron sodium fluoride phosphate (FeNaF(PO4)) 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4)) 958636-40-3P, Iron sodium fluoride phosphate (FeNa1.5F(PO4)) 1034496-00-8P, Iron sodium fluoride phosphate 1034496-02-0P, Iron sodium fluoride phosphate (FeNa1.25F(PO4)) 1034496-03-1P, Iron sodium fluoride phosphate (FeNa1.75F(PO4))
(sodium iron fluorophosphate cathode materials for lithium-ion batteries)

L54 ANSWER 32 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:706897 HCAPLUS Full-text
DOCUMENT NUMBER: 149:57644
TITLE: Rechargeable lithium battery
INVENTOR(S): Roh, Sae-Weon; Mun, In-Tae; Song, Eui-Hwan
PATENT ASSIGNEE(S): S. Korea
SOURCE: U.S. Pat. Appl. Publ., 12pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20080138713	A1	20080612	US 2007-757298	20070601
KR 2008054100	A	20080617	KR 2006-126257	20061212
KR 982325	B1	20100915		
JP 2008147153	A	20080626	JP 2007-98482	20070404
EP 1936731	A1	20080625	EP 2007-110033	20070612
EP 1936731	B1	20090819		
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, RS				
CN 101202362	A	20080618	CN 2007-10112566	20070621
PRIORITY APPLN. INFO.:			KR 2006-126257 A	20061212

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 13 Jun 2008
AB A rechargeable lithium battery is provided that includes a neg. electrode including a neg. active material, a pos. electrode including a pos. active material, and an electrolyte. The electrolyte includes a lithium salt and a

non-aqueous organic solvent including from about 1 to about 20 volume% of a cyclic carbonate and from about 80 to about 99 volume% of a linear carbonate. The pos. electrode has an active mass d. of about 3.7g/cc or greater. The rechargeable lithium battery shows improved cycle-life and storage characteristics at high temps., and good high rate characteristics.

IT 7447-41-8, Lithium chloride (LiCl), uses
10377-51-2, Lithium iodide 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(rechargeable lithium battery)

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

RN 329025-35-6 HCAPLUS
CN Iron lithium phosphate (Fe2Li1-3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

INCL 429338000
IPCI H01M0006-16 [I,A]
NCL 429/338.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 623-96-1, Dipropyl carbonate 1314-62-1, Vanadium oxide (V2O5), uses 4427-96-7, Vinylethylene carbonate 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride (LiCl), uses 7570-02-7, DiVinyl carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 12162-92-4, Lithium vanadium oxide (LiV2O5) 12190-79-3, Cobalt lithium oxide (CoLiO2) 13568-36-0, Lithium nickel vanadium oxide (LiNiVO4) 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethylpropyl carbonate 37220-89-6, Aluminum lithium oxide 56525-42-9, Methylpropyl carbonate 90076-65-6 131651-65-5 244761-29-3, Lithium bisoxalatoborate 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(rechargeable lithium battery)

L54 ANSWER 33 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:256310 HCAPLUS Full-text
DOCUMENT NUMBER: 150:451872
TITLE: Synthesis and characterization of LiMXFe1-XPO4 (M = Cu, Sn; X = 0.02) cathodes - a study on the effect of cation substitution in LiFePO4 material
AUTHOR(S): Jayaprakash, N.; Kalaiselvi, N.; Periasamy, P.
CORPORATE SOURCE: Central Electrochemical Research Institute, Karaikudi, India
SOURCE: International Journal of Electrochemical Science (2008), 3(4), 476-488
CODEN: IJESIV; ISSN: 1452-3981
URL: http://www.electrochemsci.org/papers/vol3/3040476.pdf
PUBLISHER: Electrochemical Science Group
DOCUMENT TYPE: Journal; (online computer file)
LANGUAGE: English
ED Entered STN: 29 Feb 2008
AB An attempt has been made for the possible augmentation and exploration of partially substituted LiFePO4 material as a pos. electrode for lithium battery applications. In this regard, cationic substitution of Cu and Sn (2%) to the native LiFePO4/C electro active material has been carried out via. ball milling, with a view to understand the effect of resp. transition and non-transition metals upon LiFePO4 individually. Uniformly distributed particles (SEM) of LiMXFe1-XPO4/C (M = Cu, Sn) with phase pure nature (XRD) and finer crystallite size (<1μm) were obtained. Further, it is interesting to note that irresp. of the nature of the dopant metal, the simple route of ball milled LiMXFe1-XPO4/C [M = Cu, Sn] cathodes endowed with improved conductivity and stable reversible capacity values (charge-discharge). In other words, the LiCu0.02Fe0.98PO4/C cathode delivered a reversible capacity of .apprx.105 mAh/g with an excellent capacity retention characteristic. On the other hand LiSn0.02Fe0.98PO4/C cathodes exhibited an average specific capacity of .apprx.100mAh/g with progressively enhanced efficiency values. Results of Fourier Transform Infra Red (FTIR) spectroscopy and Cyclic Voltammetric studies of LiMXFe1-XPO4/C (M = Cu, Sn) composites are also appended and correlated suitably.
IT 1023672-58-3P, Iron lithium tin phosphate (Fe0.98LiSn0.02(PO4)) 1023672-60-7P, Copper iron lithium phosphate (Cu0.02Fe0.98Li(PO4))
(synthesis and characterization of cation substituted LiFePO4 material)
RN 1023672-58-3 HCAPLUS
CN Iron lithium tin phosphate (Fe0.98LiSn0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Sn	0.02	7440-31-5
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 1023672-60-7 HCAPLUS
CN Copper iron lithium phosphate (Cu0.02Fe0.98Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	1	14265-44-2
Cu	0.02	7440-50-8
Li	1	7439-93-2
Fe	0.98	7439-89-6

IT 7772-99-8, Stannous chloride, reactions
(synthesis and characterization of cation substituted LiFePO4 material)
RN 7772-99-8 HCAPLUS
CN Tin chloride (SnCl2) (CA INDEX NAME)

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cathode substituted lithium iron phosphate
IT Battery cathodes
(synthesis and characterization of cation substituted LiFePO4 material)
IT 1023672-58-3P, Iron lithium tin phosphate (Fe0.98LiSn0.02(PO4)) 1023672-60-7P, Copper iron lithium phosphate (Cu0.02Fe0.98Li(PO4))
(synthesis and characterization of cation substituted LiFePO4 material)
IT 554-13-2, Lithium carbonate 1184-64-1, Cupric carbonate 7772-99-8, Stannous chloride, reactions 7783-28-0, Ammonium hydrogen phosphate 20427-59-2, Cupric hydroxide 166897-40-1, Ferric oxalate hexahydrate
(synthesis and characterization of cation substituted LiFePO4 material)
OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 34 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:46515 HCAPLUS Full-text
DOCUMENT NUMBER: 148:195233
TITLE: Manufacture of lithium ferric phosphate composite cathode material for secondary lithium battery
INVENTOR(S): Liu, Lijun; Jiang, Huafeng; Han, Lei; Zhou, Huansheng
PATENT ASSIGNEE(S): Beijing Zhongrun Hengdong Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 17pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101101988	A	20080109	CN 2007-10145501	20070827

CN 100499225 C 20090610
PRIORITY APPLN. INFO.: CN 2007-10145501 20070827

ED Entered STN: 11 Jan 2008
AB The title cathode material is manufactured by (1) using iron or a mixture of iron and other metal or an alloy as an anode, a common cathode material as a cathode, and a lithium source matter and a phosphor source matter in a solvent as an electrolyte solution, and performing electrolysis reaction, (2) drying the electrolyzed products to obtain a powdery precursor, (3) mixing the above powdery precursor and a carbon source matter at a certain ratio, and firing at suitable temperature for a certain time, and (4) grinding the powder, and screening to obtain the final product. The obtained composite material has the advantages of high bulk d., high volume specific capacity, good electrochem. properties, no pungent gas release (during post-sintering process), and no pollution, and is suitable for large-scale industrial production
IT 331622-62-9P, Iron lithium nickel phosphate (Fe0.8LiNi0.2(PO4)) 1004287-20-0P
(manufacture of containing Li-Fe phosphate composite materials for secondary lithium batteries)
RN 331622-62-9 HCAPLUS
CN Iron lithium nickel phosphate (Fe0.8LiNi0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0.2	7440-02-0
Li	1	7439-93-2
Fe	0.8	7439-89-6

RN 1004287-20-0 HCAPLUS
CN Iron lithium magnesium manganese phosphate (Fe0.4LiMg0.1Mn0.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0.5	7439-96-5
Mg	0.1	7439-95-4
Li	1	7439-93-2
Fe	0.4	7439-89-6

IT 7447-41-8, Lithium chloride, reactions 7789-24-4, Lithium fluoride, reactions
(manufacture of containing Li-Fe phosphate composite materials for secondary lithium batteries)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

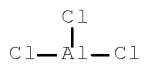
IPCI H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-04 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-48 [I,C]; H01M0004-48 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium ferric phosphate secondary battery cathode manuf
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 331622-62-9P, Iron lithium nickel phosphate (Fe0.8LiNi0.2(PO4)) 1004287-20-0P
(manufacture of containing Li-Fe phosphate composite materials for secondary lithium batteries)
IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1314-56-3, Phosphorus oxide (P2O5), reactions 7439-89-6, Iron, reactions 7439-95-4, Magnesium, reactions 7439-96-5, Manganese, reactions 7440-02-0, Nickel, reactions 7440-32-6, Titanium, reactions 7447-41-8, Lithium chloride, reactions 7664-38-2, Phosphoric acid, reactions 7789-24-4, Lithium fluoride, reactions 7790-69-4, Lithium nitrate 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate 13453-80-0, Lithium dihydrogen phosphate
(manufacture of containing Li-Fe phosphate composite materials for secondary lithium batteries)

L54 ANSWER 35 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:1237548 HCAPLUS Full-text
DOCUMENT NUMBER: 147:505381
TITLE: Cathode material for manufacturing a rechargeable battery
INVENTOR(S): Yang, Chih-Wei
PATENT ASSIGNEE(S): Aquire Energy Co. Ltd., Taiwan
SOURCE: Eur. Pat. Appl., 21pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

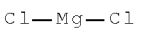
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1850409	A1	20071031	EP 2007-251680	20070423
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, YU				
CN 101064367	A	20071031	CN 2006-10074964	20060425
CN 100563047	C	20091125		
CA 2585594	A1	20071025	CA 2007-2585594	20070420
KR 2007105266	A	20071030	KR 2007-39924	20070424
KR 809570	B1	20080304		
JP 2007294461	A	20071108	JP 2007-114024	20070424

IN 2007KO00638 A 20080725 IN 2007-KO638 20070425
HK 1109679 A1 20100806 HK 2008-100132 20080107
PRIORITY APPLN. INFO.: CN 2006-10074964 A 20060425

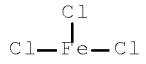
ED Entered STN: 01 Nov 2007
AB A cathode material includes crystalline nanometer-sized primary particles of a metal compound having one of olivine and NASICON structures and a particle size ranging from 10 to 500 nm, and micrometer-sized secondary particles having a particle size ranging from 1 to 50 μm. Each of the micrometer-sized secondary particles is composed of the crystalline nanometer-sized primary particles.
IT 7446-70-0, Aluminum chloride (AlCl3), uses
7786-30-3, Magnesium chloride (MgCl2), uses
(cathode material for manufacturing rechargeable battery)
RN 7446-70-0 HCAPLUS
CN Aluminum chloride (AlCl3) (CA INDEX NAME)



RN 7786-30-3 HCAPLUS
CN Magnesium chloride (MgCl2) (CA INDEX NAME)



IT 7705-08-0, Ferric chloride, reactions
(cathode material for manufacturing rechargeable battery)
RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



IT 928163-03-5P
(cathode material for manufacturing rechargeable battery)
RN 928163-03-5 HCAPLUS
CN Aluminum iron lithium magnesium phosphate (Al0.01Fe0.98LiMg0.01(PO4))
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.01	7439-95-4
Li	1	7439-93-2
Fe	0.98	7439-89-6
Al	0.01	7429-90-5

IPCI H01M0004-58 [I,A]; H01M0010-40 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST cathode material rechargeable battery fabrication
IT Battery cathodes
Nanoparticles
Particle size
Secondary batteries
Surface area
(cathode material for manufacturing rechargeable battery)
IT Carbonaceous materials (technological products)
Fluoropolymers
Styrene-butadiene rubber
(cathode material for manufacturing rechargeable battery)
IT 50-99-7, Glucose, uses 57-50-1, Sucrose, uses 872-50-4, N-Methylpyrrolidone, uses 7446-70-0, Aluminum chloride (AlCl3), uses 7786-30-3, Magnesium chloride (MgCl2), uses 9000-11-7, CMC 24937-79-9, PVDF
(cathode material for manufacturing rechargeable battery)
IT 77-92-9, Citric acid, reactions 144-62-7, Oxalic acid, reactions 7439-89-6, Iron, reactions 7705-08-0, Ferric chloride, reactions 10421-48-4, Ferric nitrate
(cathode material for manufacturing rechargeable battery)
IT 15365-14-7P, Iron lithium phosphate felipo4 928163-03-5P
(cathode material for manufacturing rechargeable battery)
IT 7440-44-0, Carbon, uses
(particles; cathode material for manufacturing rechargeable battery)
IT 9003-55-8
(styrene-butadiene rubber; cathode material for manufacturing rechargeable battery)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 36 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:1112462 HCAPLUS Full-text
DOCUMENT NUMBER: 148:13999
TITLE: A multifunctional 3.5 V iron-based phosphate cathode for rechargeable batteries
AUTHOR(S): Ellis, B. L.; Makahnouk, W. R. M.; Makimura, Y.; Toghill, K.; Nazar, L. F.
CORPORATE SOURCE: Department of Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1, Can.
SOURCE: Nature Materials (2007), 6(10), 749-753
CODEN: NMAACR; ISSN: 1476-1122
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 04 Oct 2007
AB In the search for new pos.-electrode materials for lithium-ion batteries, recent research has focused on nanostructured lithium transition-metal phosphates that exhibit desirable properties such as high energy storage capacity combined with electrochem. stability. Only one member of this class-the olivine LiFePO4 (reference 3)-has risen to prominence so far, owing to its other characteristics, which include low cost, low environmental impact and safety. These are critical for large-capacity systems such as plug-in hybrid

elec. vehicles. Nonetheless, olivine has some inherent shortcomings, including 1-dimensional lithium-ion transport and a two-phase redox reaction that together limit the mobility of the phase boundary. Thus, nanocrystallites are key to enable fast rate behavior. Also probably the long-term economic viability of large-scale Li-ion energy storage systems could be ultimately limited by global lithium reserves, although this remains speculative at present. Here, the authors report on a sodium/lithium iron phosphate, A2FePO4F (A = Na, Li), that could serve as a cathode in either Li-ion or Na-ion cells. Also, it possesses facile two-dimensional pathways for Li+ transport, and the structural changes on reduction-oxidation are minimal. This results in a volume change of only 3.7% that, unlike the olivine, contributes to the absence of distinct two-phase behavior during redox, and a reversible capacity that is 85% of theor.

IT 958636-42-5P, Iron lithium sodium fluoride phosphate (FeLiNaF(PO4))
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)
RN 958636-42-5 HCAPLUS
CN Iron lithium sodium fluoride phosphate (FeLiNaF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1	7440-23-5
Li	1	7439-93-2
Fe	1	7439-89-6

IT 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)
RN 477779-90-1 HCAPLUS
CN Iron sodium fluoride phosphate (FeNa2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	2	7440-23-5
Fe	1	7439-89-6

IT 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)
RN 484039-86-3 HCAPLUS
CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

IT 958636-40-3P, Iron sodium fluoride phosphate (FeNa1.5F(PO4))
(of alkali metal fluoropohsphate cathode materials)
RN 958636-40-3 HCAPLUS

CN Iron sodium fluoride phosphate (FeNa1.5F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1.5	7440-23-5
Fe	1	7439-89-6

IT 7550-35-8, Lithium bromide 7681-49-4, Sodium fluoride, reactions 10377-51-2, Lithium iodide
(of alkali metal fluoropohsphate cathode materials)
RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 7681-49-4 HCAPLUS
CN Sodium fluoride (NaF) (CA INDEX NAME)

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

IT 418771-26-3P, Iron sodium fluoride phosphate (FeNaF(PO4))
(oxidized form; multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)
RN 418771-26-3 HCAPLUS
CN Iron sodium fluoride phosphate (FeNaF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	1	7440-23-5
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 72, 75
ST multifunctional sodium lithium iron fluorophosphate cathode secondary battery; sol gel solid state synthesis metal iron fluorophosphate crystal
IT Electric potential

(during iron oxidation, cycling; of alkali metal fluoropohsphate cathode materials)

IT Deformation (mechanical)
(during redox reactions; multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT Lithiation
(electrochem.; of alkali metal fluoropohsphate cathode materials)

IT Secondary batteries
(lithium; multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT Battery cathodes
Ionic conductivity
Nanostructures
Redox reaction
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT Phosphates
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT Calcination
Crystal structure
Open circuit potential
Sintering
Sol-gel processing
Solid state reaction
(of alkali metal fluoropohsphate cathode materials)

IT Carbon black
Fluoropolymers
(of alkali metal fluoropohsphate cathode materials)

IT Electric capacitance
(of assembled batteries and cathodes; of alkali metal fluoropohsphate cathode materials)

IT Crystal structure types
(orthorhombic; multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT Lithiation
(reductive; of alkali metal fluoropohsphate cathode materials)

IT 7440-44-0, Carbon, uses
(forms on surface of crystal from sol gel route; of alkali metal fluoropohsphate cathode materials)

IT 958636-42-5P, Iron lithium sodium fluoride phosphate (FeLiNaF(PO4))
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
(multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)

IT 958636-40-3P, Iron sodium fluoride phosphate (FeNa1.5F(PO4))
(of alkali metal fluoropohsphate cathode materials)

IT 127-09-3, Sodium acetate 144-55-8, Sodium bicarbonate, reactions 516-03-0, Ferrous oxalate 3094-87-9, Ferrous acetate 7550-35-8, Lithium bromide 7664-38-2, Phosphoric acid, reactions 7681-49-4, Sodium fluoride, reactions 7722-76-1, Ammonium dihydrogen phosphate 10377-51-2, Lithium iodide 14635-75-7, Nitrosyl tetrafluoroborate

(of alkali metal fluoropohsphate cathode materials)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate (LiPF6) 24937-79-9, Polyvinylidene difluoride
(of alkali metal fluoropohsphate cathode materials)
IT 418771-26-3P, Iron sodium fluoride phosphate (FeNaF(PO4))
(oxidized form; multifunctional 3.5 V iron-based fluorophosphate cathode for rechargeable batteries)
OS.CITING REF COUNT: 41 THERE ARE 41 CAPLUS RECORDS THAT CITE THIS RECORD (41 CITINGS)
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 37 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:1071880 HCAPLUS Full-text
DOCUMENT NUMBER: 147:452202
TITLE: Method for preparing a phosphorus-site doped lithium iron phosphate cathode materials
INVENTOR(S): Yang, Yong; Zhang, Zhongru; Zhu, Changbao
PATENT ASSIGNEE(S): Xiamen University, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101037195	A	20070919	CN 2007-10008713	20070316
CN 100494052	C	20090603		
PRIORITY APPLN. INFO.:			CN 2007-10008713	20070316

ED Entered STN: 24 Sep 2007
AB A cathode material is prepared having the formula LiyFe(P1-xMx)O4 with M being a doping element, such as Ge, Sn, Se, Te, or Bi; 0 < x < 0.5; and 0.7 < y < 2.0. The preparation method includes (1) mixing a ferrous salt, such as ferrous chloride, ferrous acetate, or ferrous sulfate, a phosphate, such as ammonium phosphate, ammonium dihydrogen phosphate, or diammonium hydrogen phosphate, and a doping material, adding one of water, ethanol and acetone as a solvent, ball-milling for 6-12 h, washing, filtering, and vacuum-drying at 60-80° for 5-8 h to obtain an intermediate product, and (2) mixing the intermediate product and a lithium salt, such as lithium carbonate, lithium hydroxide, lithium oxalate, or lithium acetate, adding water or an organic solvent as solvent, ball-milling for 6-12 h, drying at 40-120°, and calcining at 500-800° under an inert or reductive atmospheric to obtain the final product.
IT 952312-26-4P, Iron lithium tin oxide phosphate (FeLi1.05Sn0.05O0.2(PO4)0.95) 952312-27-5P, Iron lithium tin oxide phosphate (FeLi1.2Sn0.2O0.8(PO4)0.8) 952312-28-6P, Iron lithium phosphate tellurate (FeLi0.9(PO4)0.9(TeO4)0.1) 952312-29-7P, Iron lithium phosphate tellurate (FeLi1.2(PO4)0.9(TeO4)0.1) 952312-30-0P, Iron lithium phosphate selenate (FeLi1.1(PO4)0.9(SeO4)0.1) 952312-31-1P, Germanium iron lithium oxide phosphate (Ge0.15FeLi1.15O0.6(PO4)0.85) 952312-32-2P, Germanium iron lithium oxide phosphate (Ge0.1FeLi1.1O0.4(PO4)0.9) 952312-33-3P, Bismuth iron lithium oxide phosphate (Bi0.1FeLi1.2O0.4(PO4)0.9)
(preparing phosphorus-site doped lithium iron phosphate

cathode materials)
RN 952312-26-4 HCAPLUS
CN Iron lithium tin oxide phosphate (FeLi1.05Sn0.05O0.2(PO4)0.95) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.2	17778-80-2
O4P	0.95	14265-44-2
Sn	0.05	7440-31-5
Li	1.05	7439-93-2
Fe	1	7439-89-6

RN 952312-27-5 HCAPLUS
CN Iron lithium tin oxide phosphate (FeLi1.2Sn0.2O0.8(PO4)0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.8	17778-80-2
O4P	0.8	14265-44-2
Sn	0.2	7440-31-5
Li	1.2	7439-93-2
Fe	1	7439-89-6

RN 952312-28-6 HCAPLUS
CN Iron lithium phosphate tellurate (FeLi0.9(PO4)0.9(TeO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Te	0.1	15845-23-5
O4P	0.9	14265-44-2
Li	0.9	7439-93-2
Fe	1	7439-89-6

RN 952312-29-7 HCAPLUS
CN Iron lithium phosphate tellurate (FeLi1.2(PO4)0.9(TeO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Te	0.1	15845-23-5
O4P	0.9	14265-44-2
Li	1.2	7439-93-2
Fe	1	7439-89-6

RN 952312-30-0 HCAPLUS
CN Iron lithium phosphate selenate (FeLi1.1(PO4)0.9(SeO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	0.9	14265-44-2
O4Se	0.1	14124-68-6

Li	1.1	7439-93-2
Fe	1	7439-89-6

RN 952312-31-1 HCAPLUS
CN Germanium iron lithium oxide phosphate (Ge0.15FeLi1.15O0.6(PO4)0.85) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.6	17778-80-2
O4P	0.85	14265-44-2
Ge	0.15	7440-56-4
Li	1.15	7439-93-2
Fe	1	7439-89-6

RN 952312-32-2 HCAPLUS
CN Germanium iron lithium oxide phosphate (Ge0.1FeLi1.1O0.4(PO4)0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	0.9	14265-44-2
Ge	0.1	7440-56-4
Li	1.1	7439-93-2
Fe	1	7439-89-6

RN 952312-33-3 HCAPLUS
CN Bismuth iron lithium oxide phosphate (Bi0.1FeLi1.2O0.4(PO4)0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	0.9	14265-44-2
Bi	0.1	7440-69-9
Li	1.2	7439-93-2
Fe	1	7439-89-6

IT 7758-94-3, Ferrous chloride
(preparing phosphorus-site doped lithium iron phosphate cathode materials)
RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

IPCI C01B0025-45 [I,A]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

ST doped lithium iron phosphate prepn cathode secondary battery

IT Secondary batteries
(lithium; preparing phosphorus-site doped lithium iron phosphate cathode materials)

IT Ball milling
Battery cathodes
(preparing phosphorus-site doped lithium iron phosphate cathode materials)

IT 15365-14-7P, Iron lithium phosphate (LiFePO4) 952312-26-4P, Iron lithium tin oxide phosphate (FeLi1.05Sn0.05O0.2(PO4)0.95) 952312-27-5P, Iron lithium tin oxide phosphate (FeLi1.2Sn0.2O0.8(PO4)0.8) 952312-28-6P, Iron lithium phosphate tellurate (FeLi0.9(PO4)0.9(TeO4)0.1) 952312-29-7P, Iron lithium phosphate tellurate (FeLi1.2(PO4)0.9(TeO4)0.1) 952312-30-0P, Iron lithium phosphate selenate (FeLi1.1(PO4)0.9(SeO4)0.1) 952312-31-1P, Germanium iron lithium oxide phosphate (Ge0.15FeLi1.15O0.6(PO4)0.85) 952312-32-2P, Germanium iron lithium oxide phosphate (Ge0.1FeLi1.1O0.4(PO4)0.9) 952312-33-3P, Bismuth iron lithium oxide phosphate (Bi0.1FeLi1.2O0.4(PO4)0.9)
(preparing phosphorus-site doped lithium iron phosphate cathode materials)

IT 1333-74-0, Hydrogen, processes
(preparing phosphorus-site doped lithium iron phosphate cathode materials)

IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1304-76-3, Bismuth trioxide, reactions 1310-53-8, Germanium dioxide, reactions 1310-65-2, Lithium hydroxide 3094-87-9, Ferrous acetate 7446-08-4, Selenium dioxide 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7758-94-3, Ferrous chloride 7783-28-0, Diammonium hydrogen phosphate 10101-83-4 10102-18-8, Sodium selenite 10361-65-6, Ammonium phosphate 12025-19-3, Sodium germanate 12058-66-1, Sodium stannate 13451-18-8, Tellurium trioxide 18282-10-5, Tin dioxide
(preparing phosphorus-site doped lithium iron phosphate cathode materials)

L54 ANSWER 38 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:728889 HCAPLUS Full-text
DOCUMENT NUMBER: 147:147114
TITLE: Composite solid electrolyte for protection of active metal anodes
INVENTOR(S): Visco, Steven J.; De Jonghe, Lutgard C.; Nimon, Yevgeniy S.
PATENT ASSIGNEE(S): Polyplus Battery Company, USA
SOURCE: PCT Int. Appl., 77 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007075867	A2	20070705	WO 2006-US48755	20061219
WO 2007075867	A3	20080612		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY,

MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV,
SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA

US 20070172739 A1 20070726 US 2006-612741 20061219
PRIORITY APPLN. INFO.: US 2005-752255P P 20051219

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 06 Jul 2007

AB This composite solid electrolyte consists of a monolithic solid electrolyte base - a continuous matrix of an inorg. active metal ion conductor - and a filler component used to exclude through-porosity in the solid electrolyte. In this way a solid electrolyte produced by any process that yields residual through-porosity can be modified by the incorporation of a filler to form an impervious composite solid electrolyte by eliminating through-porosity in the base component. Methods of making the composites are described. The composites are useful in electrochem. cells such as batteries and protected active metal anodes, particularly Li anodes, that can be protected with a protective membrane incorporating the composite solid electrolyte. This protection prevents the active metal of the anode from reacting with the environment on the cathode side of the anode, which may include aqueous, air and organic liquid electrolytes and/or electrochem. active materials.

IT 7447-41-8D, Lithium chloride (LiCl), alkali metal reaction product with 7550-35-8D, Lithium bromide (LiBr), alkali metal reaction product with 7789-24-4D, Lithium fluoride (LiF), alkali metal reaction product with 10377-51-2D, Lithium iodide (LiI), alkali metal reaction product with (anode; composite solid electrolytes for protection of active metal anodes in batteries)

RN 7447-41-8 HCAPLUS

CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7550-35-8 HCAPLUS

CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

IT 7447-41-8, Lithium chloride (LiCl), uses 7550-35-8
, Lithium bromide (LiBr) 10377-51-2, Lithium iodide (LiI)
(in aqueous electrolytes with protection of active metal anodes in batteries)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

IT 882691-96-5, Hafnium iron lithium phosphate
(in composite solid electrolytes for protection of active metal anodes in batteries)
RN 882691-96-5 HCAPLUS
CN Hafnium iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Hf	x	7440-58-6
Li	x	7439-93-2
Fe	x	7439-89-6

IPCI H01M0010-36 [I,A]; H01M0010-40 [I,A]; H01M0002-16 [I,A]; H01M0004-56 [I,A]; H01M0004-54 [I,A]; H01M0004-48 [I,C*]; H01M0004-50 [I,A]; H01M0004-34 [I,A]; H01M0004-52 [I,A]; H01M0006-18 [I,C]; H01M0006-18 [I,A]
IPCR H01M0006-18 [I,C]; H01M0006-18 [I,A]; H01M0004-02 [I,C*]; H01M0004-04

[I,C*]; H01M0004-04 [I,A]; H01M0004-13 [I,A]; H01M0004-131 [I,A]; H01M0004-133 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-056 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Glass ceramics
(alkali metal-ion conductor; in composite solid electrolytes for protection of active metal anodes in batteries)

IT 1308-80-1D, Copper nitride (Cu3N), alkali metal reaction product with, Li reaction product with 7447-41-8D, Lithium chloride (LiCl), alkali metal reaction product with 7550-35-8D, Lithium bromide (LiBr), alkali metal reaction product with 7789-24-4D, Lithium fluoride (LiF), alkali metal reaction product with 10377-51-2D, Lithium iodide (LiI), alkali metal reaction product with 12057-29-3D, Lithium phosphide (Li3P), alkali metal reaction product with 26134-62-3D, Lithium nitride (Li3N), alkali metal reaction product with 184905-46-2D, Lithium nitrogen phosphorus oxide, alkali metal reaction product with
(anode; composite solid electrolytes for protection of active metal anodes in batteries)

IT 1301-96-8, Silver oxide (AgO) 1332-37-2, Iron oxide, uses 1335-25-7, Lead oxide 11129-60-5, Manganese oxide 12026-04-9, Nickel hydroxide oxide (Ni(OH)O)
(cathode containing; composite electrolytes for protection of active metal anodes in batteries with)

IT 64-19-7, Acetic acid, uses 546-89-4, Lithium acetate 1310-65-2, Lithium hydroxide (Li(OH)) 7447-41-8, Lithium chloride (LiCl), uses 7550-35-8, Lithium bromide (LiBr) 7647-01-0, Hydrogen chloride, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 10377-51-2, Lithium iodide (LiI) 12124-97-9, Ammonium bromide ((NH4)Br) 12125-02-9, Ammonium chloride ((NH4)Cl), uses
(in aqueous electrolytes with protection of active metal anodes in batteries)

IT 7440-23-5, Sodium, uses 9002-84-0, Polytetrafluoroethylene 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 25322-68-3D, PEO, cross-linked 61179-11-1, Lanthanum lithium titanium oxide 89072-99-1, Nasiglas 273943-45-6 882691-94-3, Chromium hafnium lithium phosphate 882691-95-4, Hafnium indium lithium phosphate 882691-96-5, Hafnium iron lithium phosphate 882691-97-6, Hafnium lithium tantalum phosphate 882691-98-7, Hafnium lithium scandium phosphate 882691-99-8, Hafnium lithium lutetium phosphate 882692-00-4, Hafnium lithium yttrium phosphate 937242-60-9, Lanthanum lithium titanium oxide (La0.7Li0.3TiO3) 943436-14-4 943436-15-5 943436-16-6 943436-17-7 943436-18-8 943436-19-9 943436-20-2 943436-21-3 943436-22-4 943436-23-5 943436-24-6
(in composite solid electrolytes for protection of active metal anodes in batteries)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

L54 ANSWER 39 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2007:328346 HCAPLUS Full-text

DOCUMENT NUMBER: 146:362058

TITLE: Manufacture of cathode active mass for secondary nonaqueous electrolyte batteries

INVENTOR(S): Nakanishi, Shinji; Yoshizawa, Hiroshi; Okada, Shigeto

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Kyushu University

SOURCE: Jpn. Kokai Tokkyo Koho, 19pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007073360	A	20070322	JP 2005-259604	20050907
PRIORITY APPLN. INFO.:			JP 2005-259604	20050907

ED Entered STN: 22 Mar 2007

AB The active mass is manufactured by mixing raw materials of Li2MPO4F (M is ≥1 transition metal element selected from Fe, Co, Mn, and Ni); and fusing the raw material mixture

IT 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)

RN 484039-86-3 HCAPLUS

CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

IT 7789-24-4, Lithium fluoride, reactions
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

IPCI H01M0004-58 [I,A]; H01M0010-40 [I,A]; H01M0010-36 [I,C*]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]

IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0010-36 [I,C]; H01M0010-40 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST manuf cathode battery lithium transition metal fluoro phosphate

IT Battery cathodes
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)

IT 13826-59-0P, Lithium manganese phosphate (LiMnPO4) 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4)) 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4))
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)

IT 1314-56-3, Phosphorus oxide (P2O5), reactions 1345-25-1, Iron oxide

(FeO), reactions 7789-24-4, Lithium fluoride, reactions 12057-24-8, Lithium oxide (Li2O), reactions 13824-63-0, Cobalt lithium phosphate (CoLiPO4) 13977-83-8, Lithium nickel phosphate (LiNiPO4) 411234-54-3, Iron lithium phosphate
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L54 ANSWER 40 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:286942 HCAPLUS Full-text
DOCUMENT NUMBER: 146:299360
TITLE: Cathode material for manufacturing a rechargeable battery
INVENTOR(S): Yang, Chih-Wei
PATENT ASSIGNEE(S): Aquire Energy Co., Ltd., Taiwan
SOURCE: U.S. Pat. Appl. Publ., 17pp., Cont.-in-part of U.S. Ser. No. 222,569.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 9
PATENT INFORMATION:

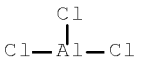
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070059598	A1	20070315	US 2006-510096	20060825
US 7700236	B2	20100420		
US 20060257307	A1	20061116	US 2005-222569	20050909
AT 385999	T	20080315	AT 2005-256174	20051003
US 20070207385	A1	20070906	US 2007-747746	20070511
US 7781100	B2	20100824		
US 20070238021	A1	20071011	US 2007-764686	20070618
US 7799457	B2	20100921		
US 20080107967	A1	20080508	US 2007-940283	20071114
US 20080138710	A1	20080612	US 2007-940276	20071114
PRIORITY APPLN. INFO.:			US 2005-222569	A2 20050909
			TW 2005-115023	A 20050510
			EP 2005-256174	A 20051003
			CN 2006-10080365	A 20060511
			US 2006-510096	A2 20060825
			US 2006-518805	A2 20060911
			US 2007-747746	A2 20070511
			US 2007-764629	A2 20070618

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 16 Mar 2007
AB A cathode material having olivine or NASICON structures and includes micrometer-sized secondary particles having a particle size of 1-50 μm. Each of the micrometer-sized secondary particles is composed of crystalline nanometer-sized primary particles of a metal compound having a particle size of 10-500 nm. The metal compound has a formula A3xM2y(PO4)3 with A being a Group IA, IIA, or IIIA element, M being a 2nd metal element from Groups IIA,

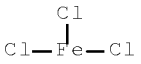
IIIA, or a transition element, and 0<x≤1.2, and 0<y≤1.6. Carbon particles adhere to the surface of the crystalline nanometer-sized primary particles. The cathode material has a BET sp. surface area of 5-100 m2/g. The cathode material is coated on an electrode plate. The cathode material contains a binder, such as styrene-butadiene rubber or polyvinylidene fluoride. The cathode material contains a thickener, especially CM-cellulose.

IT 7446-70-0, Aluminum chloride, reactions 7705-08-0, Ferric chloride, reactions 7786-30-3, Magnesium chloride, reactions
(cathode material for manufacturing rechargeable battery)

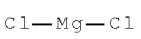
RN 7446-70-0 HCAPLUS
CN Aluminum chloride (AlCl3) (CA INDEX NAME)



RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



RN 7786-30-3 HCAPLUS
CN Magnesium chloride (MgCl2) (CA INDEX NAME)



IT 928163-03-5P
(cathode material; cathode material for manufacturing rechargeable battery)

RN 928163-03-5 HCAPLUS
CN Aluminum iron lithium magnesium phosphate (Al0.01Fe0.98LiMg0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.01	7439-95-4
Li	1	7439-93-2
Fe	0.98	7439-89-6
Al	0.01	7429-90-5

INCL 429209000; 423306000; 429217000; 252182100; 429232000
IPCI C01B0025-26 [I,A]; H01M0004-02 [I,A]; H01M0004-62 [I,A]; H01M0004-58 [I,A]; H01M0004-36 [I,A]; C01B0025-45 [N,A]; C01B0025-00 [N,C*]
IPCR C01B0025-00 [I,C]; C01B0025-26 [I,A]; H01M0004-02 [I,C*]; H01M0004-02

[N,A]; H01M0004-136 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0004-62 [I,C]; H01M0004-62 [I,A]; C01B0025-45 [N,A]; H01M0004-36 [I,C]; H01M0004-36 [I,A]
NCL 429/209.000; 252/182.100; 423/306.000; 429/217.000; 429/232.000; 429/218.100; 429/220.000; 429/221.000; 429/223.000; 429/224.000; 429/229.000; 429/231.500; 429/231.600; 429/231.900; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST cathode material rechargeable battery lithium ferrous phosphate
IT Styrene-butadiene rubber, uses
(cathode containing; cathode material for manufacturing rechargeable battery)
IT Battery cathodes
NASICONs
Secondary batteries
(cathode material for manufacturing rechargeable battery)
IT Fluoropolymers, uses
(cathode material for manufacturing rechargeable battery)
IT Charcoal
(cathode material for manufacturing rechargeable battery)
IT 7440-44-0, Carbon, uses
(anode, cathode containing; cathode material for manufacturing rechargeable battery)
IT 9004-32-4, Carboxymethyl cellulose
(cathode containing; cathode material for manufacturing rechargeable battery)
IT 24937-79-9, Polyvinylidene fluoride
(cathode containing; cathode material for manufacturing rechargeable battery)
IT 50-99-7, Glucose, processes 57-50-1, Sucrose, processes 77-92-9, Citric acid, processes 144-62-7, Oxalic acid, processes
(cathode material for manufacturing rechargeable battery)
IT 1310-65-2, Lithium hydroxide 7439-89-6, Iron, reactions 7446-70-0, Aluminum chloride, reactions 7664-38-2, Phosphoric acid, reactions 7705-08-0, Ferric chloride, reactions 7786-30-3, Magnesium chloride, reactions 10421-48-4, Ferric nitrate
(cathode material for manufacturing rechargeable battery)
IT 15365-14-7P, Iron lithium phosphate felipo4 928163-03-5P
(cathode material; cathode material for manufacturing rechargeable battery)
IT 7429-90-5, Aluminum, uses
(electrode plate; cathode material for manufacturing rechargeable battery)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
(electrolyte containing; cathode material for manufacturing rechargeable battery)
IT 21324-40-3, Lithium hexafluorophosphate
(electrolyte; cathode material for manufacturing rechargeable battery)
IT 9003-55-8
(styrene-butadiene rubber, cathode containing; cathode material for manufacturing rechargeable battery)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L54 ANSWER 41 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:1334194 HCAPLUS Full-text
DOCUMENT NUMBER: 147:192807

TITLE: Synthesis and electrochemical performance of NaV1-xFexPO4F
AUTHOR(S): Liu, Zhi-ming; Wang, Xian-you; Zhuo, Hai-tao; Tang, An-ping
CORPORATE SOURCE: College of Chemistry, Xiangtan University, Xiangtan, Hunan, 411105, Peop. Rep. China
SOURCE: Dianchi (2006), 36(5), 335-337
CODEN: DNCHEP; ISSN: 1001-1579
PUBLISHER: Dianchi Zazhishe
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
ED Entered STN: 21 Dec 2006
AB NaV1-xFexPO4F (x = 0, 0.04, and 0.06) as cathode material of sodium-ion battery was prepared with high-temperature solid-phase method. The crystal structure and morphol. of the material were studied by FTIR, XRD, and SEM. The effects of the doped element Fe on performance improvement of the material were analyzed in terms of the crystal structure, galvanostatic charge-discharge test, and cycle performance. After Fe was doped, the electrochem. performance of cathode material was improved, and the capacity retention of NaV0.94Fe0.06PO4F was 91.8% after 20 cycles.
IT 944542-93-2P, Iron sodium vanadium fluoride phosphate (Fe0.04NaV0.96F(PO4)) 944542-94-3P, Iron sodium vanadium fluoride phosphate (Fe0.06NaV0.94F(PO4))
(synthesis and electrochem. performance of NaV1-xFexPO4F)
RN 944542-93-2 HCAPLUS
CN Iron sodium vanadium fluoride phosphate (Fe0.04NaV0.96F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
V	0.96	7440-62-2
Na	1	7440-23-5
Fe	0.04	7439-89-6

RN 944542-94-3 HCAPLUS
CN Iron sodium vanadium fluoride phosphate (Fe0.06NaV0.94F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
V	0.94	7440-62-2
Na	1	7440-23-5
Fe	0.06	7439-89-6

IT 7681-49-4, Sodium fluoride, reactions
(synthesis and electrochem. performance of NaV1-xFexPO4F)
RN 7681-49-4 HCAPLUS
CN Sodium fluoride (NaF) (CA INDEX NAME)

F—Na

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST synthesis electrochem performance sodium vanadium iron phosphate fluoride doping; cathode
IT Battery cathodes
Crystal structure
Dopants
Electric capacitance
Microstructure
Secondary batteries
(synthesis and electrochem. performance of NaV1-xFexPO4F)
IT 477779-87-6P, Sodium vanadium fluoride phosphate (NaVF(PO4)) 944542-93-2P, Iron sodium vanadium fluoride phosphate (Fe0.04NaV0.96F(PO4)) 944542-94-3P, Iron sodium vanadium fluoride phosphate (Fe0.06NaV0.94F(PO4))
(synthesis and electrochem. performance of NaV1-xFexPO4F)
IT 1309-33-7, Ferric hydroxide 1314-34-7, Vanadic oxide 7681-49-4, Sodium fluoride, reactions 7722-76-1, Ammonium dihydrogen phosphate
(synthesis and electrochem. performance of NaV1-xFexPO4F)

L54 ANSWER 42 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:1138047 HCAPLUS Full-text
DOCUMENT NUMBER: 146:430279
TITLE: Synthesis, structure and performance studies of LiFePO4-based cathode materials for Li-ion battery
AUTHOR(S): Dai, Xi; Tang, Hong-hui; Zhang, Chuan-fu; Yang, Ping
CORPORATE SOURCE: School of Metallurgical Science and Engineering, Central South University, Changsha, Hunan, 410083, Peop. Rep. China
SOURCE: Advanced Processing of Metals and Materials, Sohn International Symposium, Proceedings, San Diego, CA, United States, Aug. 27-31, 2006 (2006), Volume 4, 565-572. Editor(s): Kongoli, Florian; Reddy, Ramana G. Minerals, Metals & Materials Society: Warrendale, Pa.
CODEN: 69IOSZ; ISBN: 978-0-87339-633-2
DOCUMENT TYPE: Conference
LANGUAGE: English
ED Entered STN: 31 Oct 2006
AB The LiFe1-xNixPO4(x = 0, 0.05, 0.10) cathode materials for Li-ion battery were synthesized with Fe1-xNixC2O4·2H2O(x = 0, 0.05, 0.10) as Fe sources by high temperature solid-state reaction method. The Fe1-xNixC2O4·2H2O(x = 0, 0.05, 0.10) materials were produced by liquid co-precipitation method and crystal structure and morphol. of cathode materials were characterized by x-ray diffraction and SEM. The composition contents and charge-discharge performances were measured by chemical anal. and charge-discharge apparatus The XRD patterns showed that LiFe1-xNixPO4(x = 0, 0.05, 0.10) cathode material samples were well-crystallized homogeneous olivine-type phase, with only tiny trivalent Fe impurities according to chemical anal. results. Charge-discharge test showed that cathode materials possessed excellent charge/discharge capacities, .apprx.150mAh/g at 0.1 C rate and >120mAh/g at 0.4 C rate. The polarization of cathode in charge-discharge process can be restrained effectively, for the potential offset between oxidative peak and reductive peak of doped LiFePO4 material was only 0.079 V, lower than pure LiFePO4 markedly.
IT 854751-55-6P, Iron lithium nickel phosphate (Fe0.9LiNi0.1(PO4)) 900518-41-4P, Iron lithium nickel

phosphate (FeLi0.95Ni0.05(PO4))
(synthesis, structure and performance studies of LiFePO4-based cathode materials for Li-ion battery)

RN 854751-55-6 HCAPLUS
CN Iron lithium nickel phosphate (Fe0.9LiNi0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0.1	7440-02-0
Li	1	7439-93-2
Fe	0.9	7439-89-6

RN 900518-41-4 HCAPLUS
CN Iron lithium nickel phosphate (FeLi0.95Ni0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0.05	7440-02-0
Li	0.95	7439-93-2
Fe	1	7439-89-6

IT 7718-54-9, Nickel chloride, reactions
(synthesis, structure and performance studies of LiFePO4-based cathode materials for Li-ion battery)
RN 7718-54-9 HCAPLUS
CN Nickel chloride (NiCl2) (CA INDEX NAME)

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 75
ST synthesis structure iron lithium phosphate cathode battery
IT Secondary batteries
(lithium; synthesis, structure and performance studies of LiFePO4-based cathode materials for Li-ion battery)
IT Battery cathodes
Crystal structure
Electric capacitance
Thermal analysis
X-ray diffraction
(synthesis, structure and performance studies of LiFePO4-based cathode materials for Li-ion battery)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 854751-55-6P, Iron lithium nickel phosphate (Fe0.9LiNi0.1(PO4)) 900518-41-4P, Iron lithium nickel phosphate (FeLi0.95Ni0.05(PO4))
(synthesis, structure and performance studies of LiFePO4-based cathode materials for Li-ion battery)
IT 144-62-7, Oxalic acid, reactions 554-13-2, Lithium carbonate 7718-54-9, Nickel chloride, reactions 7720-78-7 7722-76-1, Ammonium dihydrogen phosphate 7786-81-4, Nickel sulfate
(synthesis, structure and performance studies of LiFePO4-based

cathode materials for Li-ion battery)
IT 516-03-0P 170471-57-5P, Iron nickel ethanedioate (Fe0.9Ni0.1(C2O4))
934179-91-6P, Iron nickel ethanedioate (Fe0.95Ni0.05(C2O4))
(synthesis, structure and performance studies of LiFePO4-based
cathode materials for Li-ion battery)
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 43 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:1093729 HCAPLUS Full-text
DOCUMENT NUMBER: 145:441341
TITLE: Methodd of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries
PATENT ASSIGNEE(S): Daejung Chemicals & Metals Co., Ltd., S. Korea; Sun, Yang Kook; Kim, Woo Seong; Han, Jung Min
SOURCE: PCT Int. Appl., 31pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006109930	A1	20061019	WO 2006-KR987	20060317
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
KR 2006109305	A	20061019	KR 2006-23501	20060314
KR 822013	B1	20080414		
EP 1880435	A1	20080123	EP 2006-716437	20060317
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR				
JP 2008536285	T	20080904	JP 2008-506363	20060317
CN 101156260	A	20080402	CN 2006-80011546	20071009
US 20090087362	A1	20090402	US 2007-918163	20071010
PRIORITY APPLN. INFO.:			KR 2005-31309 A	20050415
			KR 2006-23501 A	20060314
			WO 2006-KR987 W	20060317

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 20 Oct 2006
AB Disclosed herein is a cathode active material coated with a fluorine compound for lithium secondary batteries. The cathode active material is structurally stable, and improves the charge-discharge characteristics, cycle characteristics, high-voltage characteristics, high-rate characteristics and thermal stability of batteries.

IT 912841-83-9, Cobalt iron lithium phosphate
912841-84-0, Iron lithium nickel phosphate
(method of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries)
RN 912841-83-9 HCAPLUS
CN Cobalt iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Co	x	7440-48-4
Li	x	7439-93-2
Fe	x	7439-89-6

RN 912841-84-0 HCAPLUS
CN Iron lithium nickel phosphate (CA INDEX NAME)

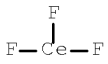
Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7681-49-4, Sodium fluoride, uses 7758-88-5, Cerium fluoride (CeF3) 7775-41-9, Silver fluoride (AgF) 7782-64-1, Manganese fluoride (MnF2) 7783-39-3, Mercury fluoride (HgF2) 7783-40-6, Magnesium fluoride (MgF2) 7783-46-2, Lead fluoride (PbF2) 7783-47-3, Tin fluoride (SnF2) 7783-48-4, Strontium fluoride (SrF2) 7783-49-5, Zinc fluoride (ZnF2) 7783-50-8, Iron fluoride (FeF3) 7783-51-9, Gallium fluoride (GaF3) 7783-52-0, Indium fluoride (InF3) 7783-53-1, Manganese fluoride (MnF3) 7783-56-4, Antimony fluoride sbf3 7783-57-5, Thallium fluoride (TlF3) 7783-58-6, Germanium fluoride gef4 7783-62-2, Tin fluoride snf4 7783-63-3, Titanium fluoride tif4 7783-64-4 7783-68-8, Niobium fluoride nbf5 7783-70-2, Antimony fluoride (SbF5) 7783-71-3, Tantalum fluoride (TaF5) 7783-77-9, Molybdenum fluoride mof6 7783-82-6 7783-95-1, Silver fluoride (AgF2) 7784-18-1, Aluminum fluoride (AlF3) 7787-32-8, Barium fluoride (BaF2) 7787-61-3 7787-62-4, Bismuth fluoride (BiF5) 7788-97-8, Chromium fluoride (CrF3) 7789-19-7, Copper fluoride (CuF2) 7789-23-3, Potassium fluoride (KF) 7789-24-4, Lithium fluoride, uses 7789-27-7, Thallium fluoride (TlF) 7789-28-8, Iron fluoride (FeF2) 7789-75-5, Calcium fluoride (CaF2), uses 7790-79-6, Cadmium fluoride (CdF2) 10028-18-9, Nickel fluoride (NiF2) 10049-16-8, Vanadium fluoride (VF4) 10049-17-9, Rhenium fluoride ref6 10060-10-3, Cerium fluoride (CeF4) 13400-13-0, Cesium fluoride (CsF) 13446-74-7, Rubidium fluoride 13470-08-1, Titanium fluoride (TiF3) 13569-80-7, Dysprosium fluoride (DyF3) 13708-63-9, Terbium fluoride (TbF3) 13709-38-1, Lanthanum fluoride (LaF3) 13709-42-7, Neodymium fluoride (NdF3) 13709-46-1, Praseodymium fluoride (PrF3) 13709-47-2, Scandium fluoride

(ScF3) 13709-49-4, Yttrium fluoride (YF3) 13709-52-9, Hafnium fluoride hff4 13760-78-6, Holmium fluoride (HoF3) 13760-79-7, Thulium fluoride (TmF3) 13760-80-0, Ytterbium fluoride (YbF3) 13760-81-1, Lutetium fluoride (LuF3) 13765-24-7, Samarium fluoride (SmF3) 13765-25-8, Europium fluoride (EuF3) 13765-26-9, Gadolinium fluoride (GdF3) 13967-25-4, Mercury fluoride (Hg2F2)
(method of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries)

RN 7681-49-4 HCAPLUS
CN Sodium fluoride (NaF) (CA INDEX NAME)

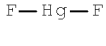
RN 7758-88-5 HCAPLUS
CN Cerium fluoride (CeF3) (CA INDEX NAME)



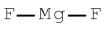
RN 7775-41-9 HCAPLUS
CN Silver fluoride (AgF) (CA INDEX NAME)

RN 7782-64-1 HCAPLUS
CN Manganese fluoride (MnF2) (CA INDEX NAME)

RN 7783-39-3 HCAPLUS
CN Mercury fluoride (HgF2) (CA INDEX NAME)



RN 7783-40-6 HCAPLUS
CN Magnesium fluoride (MgF2) (CA INDEX NAME)



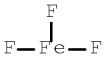
RN 7783-46-2 HCAPLUS
CN Lead fluoride (PbF2) (CA INDEX NAME)

RN 7783-47-3 HCAPLUS
CN Tin fluoride (SnF2) (CA INDEX NAME)

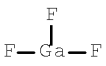
RN 7783-48-4 HCAPLUS
CN Strontium fluoride (SrF2) (CA INDEX NAME)

RN 7783-49-5 HCAPLUS
CN Zinc fluoride (ZnF2) (CA INDEX NAME)

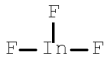
RN 7783-50-8 HCAPLUS
CN Iron fluoride (FeF3) (CA INDEX NAME)



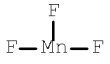
RN 7783-51-9 HCAPLUS
CN Gallium fluoride (GaF3) (CA INDEX NAME)



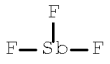
RN 7783-52-0 HCAPLUS
CN Indium fluoride (InF3) (CA INDEX NAME)



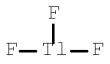
RN 7783-53-1 HCAPLUS
CN Manganese fluoride (MnF3) (CA INDEX NAME)



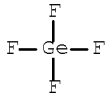
RN 7783-56-4 HCAPLUS
CN Stibine, trifluoro- (CA INDEX NAME)



RN 7783-57-5 HCAPLUS
CN Thallium fluoride (TlF3) (CA INDEX NAME)



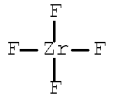
RN 7783-58-6 HCAPLUS
CN Germane, tetrafluoro- (CA INDEX NAME)



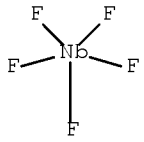
RN 7783-62-2 HCAPLUS
CN Stannane, tetrafluoro- (9CI) (CA INDEX NAME)

RN 7783-63-3 HCAPLUS
CN Titanium fluoride (TiF4), (T-4)- (9CI) (CA INDEX NAME)

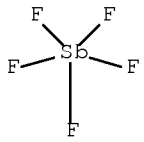
RN 7783-64-4 HCAPLUS
CN Zirconium fluoride (ZrF4), (T-4)- (CA INDEX NAME)



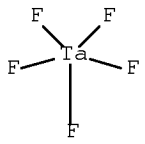
RN 7783-68-8 HCAPLUS
CN Niobium fluoride (NbF5), (TB-5-11)- (CA INDEX NAME)



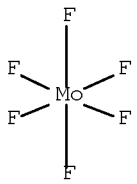
RN 7783-70-2 HCAPLUS
CN Antimony fluoride (SbF5) (CA INDEX NAME)



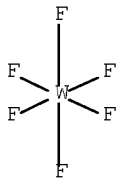
RN 7783-71-3 HCAPLUS
CN Tantalum fluoride (TaF5) (CA INDEX NAME)



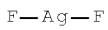
RN 7783-77-9 HCAPLUS
CN Molybdenum fluoride (MoF6), (OC-6-11)- (CA INDEX NAME)



RN 7783-82-6 HCAPLUS
CN Tungsten fluoride (WF6), (OC-6-11)- (CA INDEX NAME)



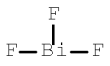
RN 7783-95-1 HCAPLUS
CN Silver fluoride (AgF2) (CA INDEX NAME)



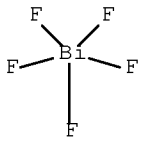
RN 7784-18-1 HCAPLUS
CN Aluminum fluoride (AlF3) (CA INDEX NAME)

RN 7787-32-8 HCAPLUS
CN Barium fluoride (BaF2) (CA INDEX NAME)

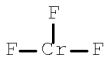
RN 7787-61-3 HCAPLUS
CN Bismuthine, trifluoro- (CA INDEX NAME)



RN 7787-62-4 HCAPLUS
CN Bismuth fluoride (BiF5) (CA INDEX NAME)



RN 7788-97-8 HCAPLUS
CN Chromium fluoride (CrF3) (CA INDEX NAME)



RN 7789-19-7 HCAPLUS
CN Copper fluoride (CuF2) (CA INDEX NAME)

RN 7789-23-3 HCAPLUS
CN Potassium fluoride (KF) (CA INDEX NAME)

RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

RN 7789-27-7 HCAPLUS
CN Thallium fluoride (TlF) (CA INDEX NAME)

F—Tl

RN 7789-28-8 HCAPLUS
CN Iron fluoride (FeF2) (CA INDEX NAME)

F—Fe—F

RN 7789-75-5 HCAPLUS
CN Calcium fluoride (CaF2) (CA INDEX NAME)

F—Ca—F

RN 7790-79-6 HCAPLUS
CN Cadmium fluoride (CdF2) (CA INDEX NAME)

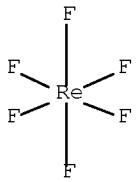
F—Cd—F

RN 10028-18-9 HCAPLUS
CN Nickel fluoride (NiF2) (CA INDEX NAME)

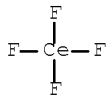
F—Ni—F

RN 10049-16-8 HCAPLUS
CN Vanadium fluoride (VF4) (7CI, 8CI, 9CI) (CA INDEX NAME)

RN 10049-17-9 HCAPLUS
CN Rhenium fluoride (ReF6), (OC-6-11)- (CA INDEX NAME)



RN 10060-10-3 HCAPLUS
CN Cerium fluoride (CeF4) (CA INDEX NAME)

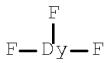


RN 13400-13-0 HCAPLUS
CN Cesium fluoride (CsF) (CA INDEX NAME)

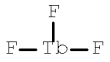
RN 13446-74-7 HCAPLUS
CN Rubidium fluoride (RbF) (CA INDEX NAME)

RN 13470-08-1 HCAPLUS
CN Titanium fluoride (TiF3) (CA INDEX NAME)

RN 13569-80-7 HCAPLUS
CN Dysprosium fluoride (DyF3) (CA INDEX NAME)

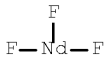


RN 13708-63-9 HCAPLUS
CN Terbium fluoride (TbF3) (CA INDEX NAME)

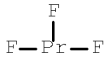


RN 13709-38-1 HCAPLUS
CN Lanthanum fluoride (LaF3) (CA INDEX NAME)

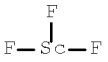
RN 13709-42-7 HCAPLUS
CN Neodymium fluoride (NdF3) (CA INDEX NAME)



RN 13709-46-1 HCAPLUS
CN Praseodymium fluoride (PrF3) (CA INDEX NAME)



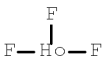
RN 13709-47-2 HCAPLUS
CN Scandium fluoride (ScF3) (CA INDEX NAME)



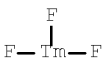
RN 13709-49-4 HCAPLUS
CN Yttrium fluoride (YF3) (CA INDEX NAME)

RN 13709-52-9 HCAPLUS
CN Hafnium fluoride (HfF4), (T-4)- (CA INDEX NAME)

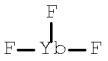
RN 13760-78-6 HCAPLUS
CN Holmium fluoride (HoF3) (CA INDEX NAME)



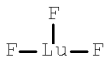
RN 13760-79-7 HCAPLUS
CN Thulium fluoride (TmF3) (CA INDEX NAME)



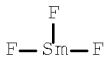
RN 13760-80-0 HCAPLUS
CN Ytterbium fluoride (YbF3) (CA INDEX NAME)



RN 13760-81-1 HCAPLUS
CN Lutetium fluoride (LuF3) (CA INDEX NAME)

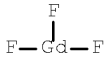


RN 13765-24-7 HCAPLUS
CN Samarium fluoride (SmF3) (CA INDEX NAME)

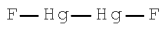


RN 13765-25-8 HCAPLUS
CN Europium fluoride (EuF3) (CA INDEX NAME)

RN 13765-26-9 HCAPLUS
CN Gadolinium fluoride (GdF3) (CA INDEX NAME)



RN 13967-25-4 HCAPLUS
CN Mercury fluoride (Hg2F2) (8CI, 9CI) (CA INDEX NAME)



IPCI H01M0004-02 [I,A]
IPCR H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-48 [I,C*]; H01M0004-48 [I,A]; H01M0004-485 [I,A]; H01M0004-50 [I,C*]; H01M0004-50 [I,A]; H01M0004-505 [I,A]; H01M0004-52 [I,C*]; H01M0004-52 [I,A]; H01M0004-525 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST fluorine compd coated cathode lithium secondary battery
IT Secondary batteries

(lithium; method of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries)

IT Battery cathodes
(method of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 97328-83-1, Cobalt iron lithium fluoride oxide 245511-77-7, Cobalt lithium nickel fluoride oxide 267009-76-7, Cobalt lithium manganese fluoride oxide 554453-38-2, Iron lithium manganese phosphate 575502-13-5, Aluminum cobalt lithium fluoride oxide 575502-15-7, Cobalt lithium tungsten fluoride oxide 575502-16-8, Cobalt lithium molybdenum fluoride oxide 575502-20-4, Cobalt gallium lithium fluoride oxide 575502-21-5, Cobalt lithium magnesium fluoride oxide 575502-22-6, Chromium cobalt lithium fluoride oxide 737006-34-7 905287-85-6, Cobalt lithium manganese sulfur oxide 912841-62-4, Cobalt lithium zinc fluoride oxide 912841-64-6, Cobalt lithium magnesium sulfur oxide 912841-65-7, Aluminum cobalt lithium sulfur oxide 912841-66-8, Cobalt lithium nickel sulfur oxide 912841-67-9, Cobalt lithium sulfur zinc oxide 912841-68-0, Cobalt iron lithium sulfur oxide 912841-69-1, Chromium cobalt lithium sulfur oxide 912841-70-4, Cobalt gallium lithium sulfur oxide 912841-71-5, Cobalt lithium molybdenum sulfur oxide 912841-72-6, Cobalt lithium sulfur tungsten oxide 912841-73-7 912841-74-8 912841-76-0 912841-77-1 912841-78-2 912841-79-3 912841-80-6 912841-81-7 912841-82-8 912841-83-9, Cobalt iron lithium phosphate 912841-84-0, Iron lithium nickel phosphate
(method of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries)

IT 2551-62-4, Sulfur fluoride sf6 7637-07-2, Boron trifluoride, uses 7681-49-4, Sodium fluoride, uses 7758-88-5, Cerium fluoride (CeF3) 7775-41-9, Silver fluoride (AgF) 7782-41-4D, Fluorine, compound 7782-64-1, Manganese fluoride (MnF2) 7783-39-3, Mercury fluoride (HgF2) 7783-40-6, Magnesium fluoride (MgF2) 7783-46-2, Lead fluoride (PbF2) 7783-47-3, Tin fluoride (SnF2) 7783-48-4, Strontium fluoride (SrF2) 7783-49-5, Zinc fluoride (ZnF2) 7783-50-8, Iron fluoride (FeF3) 7783-51-9, Gallium fluoride (GaF3) 7783-52-0, Indium fluoride (InF3) 7783-53-1, Manganese fluoride (MnF3) 7783-56-4, Antimony fluoride sbf3 7783-57-5, Thallium fluoride (TlF3) 7783-58-6, Germanium fluoride gef4 7783-61-1 7783-62-2, Tin fluoride snf4 7783-63-3, Titanium fluoride tif4 7783-64-4 7783-68-8, Niobium fluoride nbf5 7783-70-2, Antimony fluoride (SbF5) 7783-71-3, Tantalum fluoride (TaF5) 7783-77-9, Molybdenum fluoride mof6 7783-82-6 7783-95-1, Silver fluoride (AgF2) 7784-18-1, Aluminum fluoride (AlF3) 7787-32-8, Barium fluoride (BaF2) 7787-61-3 7787-62-4, Bismuth fluoride (BiF5) 7788-97-8, Chromium fluoride (CrF3) 7789-19-7, Copper fluoride (CuF2) 7789-23-3, Potassium fluoride (KF) 7789-24-4, Lithium fluoride, uses 7789-27-7, Thallium fluoride (TlF) 7789-28-8, Iron fluoride (FeF2) 7789-75-5, Calcium fluoride (CaF2), uses 7790-79-6, Cadmium fluoride (CdF2) 10028-18-9, Nickel fluoride (NiF2) 10049-16-8, Vanadium fluoride (VF4) 10049-17-9, Rhenium fluoride ref6 10060-10-3, Cerium fluoride (CeF4) 13400-13-0,

Cesium fluoride (CsF) 13446-74-7, Rubidium fluoride 13470-08-1, Titanium fluoride (TiF3) 13569-80-7, Dysprosium fluoride (DyF3) 13708-63-9, Terbium fluoride (TbF3) 13709-31-4, Vanadyl fluoride vof3 13709-36-9, Xenon fluoride (XeF2) 13709-38-1, Lanthanum fluoride (LaF3) 13709-42-7, Neodymium fluoride (NdF3) 13709-46-1, Praseodymium fluoride (PrF3) 13709-47-2, Scandium fluoride (ScF3) 13709-49-4, Yttrium fluoride (YF3) 13709-52-9, Hafnium fluoride hff4 13760-78-6, Holmium fluoride (HoF3) 13760-79-7, Thulium fluoride (TmF3) 13760-80-0, Ytterbium fluoride (YbF3) 13760-81-1, Lutetium fluoride (LuF3) 13765-24-7, Samarium fluoride (SmF3) 13765-25-8, Europium fluoride (EuF3) 13765-26-9, Gadolinium fluoride (GdF3) 13967-25-4, Mercury fluoride (Hg2F2)
(method of fabrication of cathode active material coated with fluorine compound for lithium secondary batteries)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 44 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:1071992 HCAPLUS Full-text

DOCUMENT NUMBER: 146:37878

TITLE: Syntheses of Mesoporous Hybrid Iron Oxophenyl Phosphate, Iron Oxophosphate, and Sulfonated Oxophenyl Phosphate

AUTHOR(S): Mal, Nawal Kishor; Bhaumik, Asim; Matsukata, Masahiko; Fujiwara, Masahiro

CORPORATE SOURCE: Kansai Center, National Institute of Advanced Industrial Science and Technology (AIST-Kansai), Osaka, 563-8577, Japan

SOURCE: Industrial & Engineering Chemistry Research (2006), 45(23), 7748-7751
CODEN: IECRED; ISSN: 0888-5885

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 15 Oct 2006

AB A novel organic-inorg. hybrid mesoporous Fe oxophenyl phosphate was synthesized by using supramol. assembly of Na dodecyl sulfate mols. X-ray diffraction, transmission electron microscopic studies, and N2 adsorption data indicated the wormhole-like disordered mesostructure in this sample. The 13C and 31P MAS NMR, FTIR, UV-visible spectroscopic data, and chemical anal. results indicated that all P atoms are attached to Ph groups directly and combined with Fe atoms through O atoms. Calcination of this hybrid material produced organic-free mesoporous Fe oxophosphate material, whereas sulfonation of the mesoporous Fe oxophenyl phosphate resulted in sulfonated oxophenyl phosphate. The latter showed outstanding proton conductivity, which could be used in membrane or supports of anode and cathode materials in fuel cells.

IT 915956-58-0P, Iron oxide phosphate (Fe0.68O0.54(PO4)0.32)
(preparation and surface properties of mesoporous hybrid)

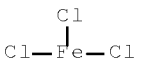
RN 915956-58-0 HCAPLUS

CN Iron oxide phosphate (Fe0.68O0.54(PO4)0.32) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O		0.54	17778-80-2
O4P		0.32	14265-44-2
Fe		0.68	7439-89-6

IT 7705-08-0, Iron trichloride, reactions
(reactant for preparation of iron oxo phenylphosphonate mesoporous hybrid)
RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



CC 78-5 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 66
IT 915956-58-0P, Iron oxide phosphate (Fe0.68O0.54(PO4)0.32)
(preparation and surface properties of mesoporous hybrid)
IT 1571-33-1, Phenylphosphonic acid 7705-08-0, Iron trichloride, reactions
(reactant for preparation of iron oxo phenylphosphonate mesoporous hybrid)
OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 45 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:399666 HCAPLUS Full-text
DOCUMENT NUMBER: 145:127452
TITLE: Room-temperature miscibility gap in LixFePO4
AUTHOR(S): Yamada, Atsuo; Koizumi, Hiroshi; Nishimura, Shin-Ichi; Sonoyama, Noriyuki; Kanno, Ryoji; Yonemura, Masao; Nakamura, Tatsuya; Kobayashi, Yo
CORPORATE SOURCE: Department of Electronic Chemistry, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Midori, Yokohama, 226-8502, Japan
SOURCE: Nature Materials (2006), 5(5), 357-360
CODEN: NMAACR; ISSN: 1476-1122
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 02 May 2006
AB The rechargeable lithium-ion cell is an advanced energy-storage system. However, high cost, safety hazards, and chemical instability prohibit its use in large-scale applications. An alternative cathode material, LiFePO4, solves these problems, but has a kinetic problem involving strong electron/hole localization. One reason for this is believed to be the limited carrier d. in the fixed monovalent Fe3+PO4/LiFe2+PO4 two-phase electrode reaction in LixFePO4. Here, the authors provide exptl. evidence that LixFePO4, at room temperature, can be described as a mixture of the Fe3+/Fe2+ mixed-valent intermediate LiαFePO4 and Li1-βFePO4 phases. Using powder neutron diffraction, the site occupancy nos. for lithium in each phase were refined to be α 0.05 and 1-β = 0.89. The corresponding solid solution ranges outside the

miscibility gap ($0 < x<\alpha, 1-\beta < x<1$) were detected by the anomaly in the configurational entropy, and also by the deviation of the open-circuit voltage from the constant equilibrium potential. These findings encourage further improvement of this important class of compds. at ambient temps.

IT 897030-96-5, Iron lithium phosphate (FeLi0.05(PO4))
897030-97-6, Iron lithium phosphate (FeLi0.89(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)

RN 897030-96-5 HCAPLUS
CN Iron lithium phosphate (FeLi0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.05	7439-93-2
Fe	1	7439-89-6

RN 897030-97-6 HCAPLUS
CN Iron lithium phosphate (FeLi0.89(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.89	7439-93-2
Fe	1	7439-89-6

IT 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)

RN 198782-39-7 HCAPLUS
CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IT 10377-51-2, Lithium iodide
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 68, 72, 75

ST miscibility iron lithium phosphate cathode phase compn mixed valence; secondary lithium battery cathode insertion phase change iron phosphate

IT Carbon black, uses
(LION; room-temperature miscibility gap in LixFePO4 and use in secondary

lithium battery cathodes)
IT Insertion reaction
(electrochem.; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Secondary batteries
(lithium; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Calorimetry
(microcalorimetry; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Crystal structure determination methods
(neutron diffractometric; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Battery cathodes
Cyclic voltammetry
Electric potential
Miscibility
Open circuit potential
Phase composition
Phase diagram
(room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Fluoropolymers, uses
(room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT 7439-93-2, Lithium, uses
(foil; room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 7429-90-5, Aluminum, uses
(mesh; room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 897030-96-5, Iron lithium phosphate (FeLi0.05(PO4))
897030-97-6, Iron lithium phosphate (FeLi0.89(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
9002-84-0, Polytetrafluoroethene 21324-40-3, Lithium hexafluorophosphate 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 10045-86-0P, Iron phosphate (FePO4)
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 697756-76-6P, Iron lithium phosphate (FeLi0.5PO4)
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 10377-51-2, Lithium iodide 13826-86-3, Nitronium tetrafluoroborate
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
OS.CITING REF COUNT: 102 THERE ARE 102 CAPLUS RECORDS THAT CITE THIS RECORD (103 CITINGS)
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 46 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:337615 HCAPLUS Full-text
DOCUMENT NUMBER: 144:394637
TITLE: Solid electrolytes based on lithium hafnium phosphate for active metal anode protection
INVENTOR(S): Nimon, Yevgeniy S.; De Jonghe, Lutgard C.; Visco, Steven J.
PATENT ASSIGNEE(S): Polyplus Battery Company, USA
SOURCE: U.S. Pat. Appl. Publ., 16 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 20060078790	A1	20060413	US 2005-245472		20051005
PRIORITY APPLN. INFO.:			US 2004-616325P	P	20041005

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 13 Apr 2006
AB Active metal electrochem. structure, in particular an active metal neg. electrode (anode) protected with an ionically conductive protective architecture incorporating a glassy, ceramic or glass-ceramic solid electrolyte material based on lithium hafnium phosphate, and associated electrochem. devices and methods, provides advantages over conventional structures. The protective architecture prevents the active metal from deleterious reaction with the environment on the other (cathode) side of the architecture, which may include aqueous, air or organic liquid electrolytes and/or electrochem. active materials.
IT 882691-96-5, Hafnium iron lithium phosphate
(can be conductive glass or ceramic electrolyte material; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
RN 882691-96-5 HCAPLUS
CN Hafnium iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Hf	x	7440-58-6
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide
(contacts anode; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

Br—Li

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

I—Li

INCL 429137000; 429246000; 429303000
IPCI H01M0002-16 [I,A]; H01M0002-18 [I,A]; H01M0002-14 [I,C*]
IPCR H01M0002-16 [I,A]; H01M0002-14 [I,C]; H01M0002-16 [I,C]; H01M0002-18 [I,A]
NCL 429/137.000; 429/246.000; 429/303.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT Membranes, nonbiological
(elec. conductive, lithium hafnium oxide; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT Ionic conductivity
(of electrolyte, at least 10-7 S/cm; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT Glass, uses
(oxynitride, active metal phosphorus oxynitride glass, conductive, contacts anode; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT 882691-94-3, Chromium hafnium lithium phosphate 882691-95-4, Hafnium indium lithium phosphate 882691-96-5, Hafnium iron lithium phosphate 882691-97-6, Hafnium lithium tantalum phosphate 882691-98-7, Hafnium lithium scandium phosphate 882691-99-8, Hafnium lithium lutetium phosphate 882692-00-4, Hafnium lithium yttrium phosphate
(can be conductive glass or ceramic electrolyte material; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT 7439-93-2D, Lithium, inorg. compds. 10377-52-3, Lithium phosphate 12057-24-8, Lithium oxide, uses 13774-56-6
(can be in conductive glass or ceramic electrolyte material; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT 882691-92-1
(conductive, ceramic or glass-ceramic; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 12057-29-3, Trilithium phosphide 26134-62-3, Trilithium nitride 668998-68-3, Lithium phosphorus nitride oxide (LiPNO)
(contacts anode; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS

RECORD (5 CITINGS)

L54 ANSWER 47 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:216209 HCAPLUS Full-text
DOCUMENT NUMBER: 144:277160
TITLE: Cathode materials and their manufacture for secondary nonaqueous-electrolyte lithium ion batteries for automobiles
INVENTOR(S): Ito, Takanori; Saito, Takazane; Horie, Hideaki
PATENT ASSIGNEE(S): Nissan Motor Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006066081	A	20060309	JP 2004-243799	20040824
PRIORITY APPLN. INFO.:			JP 2004-243799	20040824

ED Entered STN: 10 Mar 2006
AB The title cathode materials contain Li Fe phosphate compound particles on which a Li compound is attached. The title automobiles are equipped with secondary batteries or their assemblies using the above cathode materials. The title process comprises steps of firing a mixture containing an Fe compound chosen from Fe sulfate, Fe hydroxide, or their hydrate, a Li compound, and a P compound to give particles and then attaching a Li compound on surfaces of the particles. The cathode materials suppress increase of internal resistance.
IT 877630-10-9P, Iron lithium oxide phosphate (Fe0.98Li1.1O0.04(PO4)0.99)
(cathode; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
RN 877630-10-9 HCAPLUS
CN Iron lithium oxide phosphate (Fe0.98Li1.1O0.04(PO4)0.99) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.04	17778-80-2
O4P	0.99	14265-44-2
Li	1.1	7439-93-2
Fe	0.98	7439-89-6

IT 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses
(coating; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

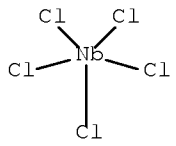
RN 7789-24-4 HCAPLUS
CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

IPCI H01M0004-58 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]; H01M0002-10 [I,A]; H01M0004-02 [I,A]; H01M0004-62 [I,A]; H01M0010-40 [I,A]; H01M0010-36 [I,C*]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium iron phosphate particle coating cathode battery automobile
IT Electric vehicles
(automobiles; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
IT Automobiles
(elec.; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
IT Secondary batteries
(lithium; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
IT Battery cathodes
(manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
IT 877630-10-9P, Iron lithium oxide phosphate (Fe0.98Li1.1O0.04(PO4)0.99)
(cathode; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
IT 107-15-3D, Ethylenediamine, compds. with lithium acetylide 546-89-4, Lithium acetate 553-54-8, Lithium benzoate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1070-75-3D, Lithium acetylide (Li2(C2)), compds. with ethylenediamine 1310-65-2, Lithium hydroxide 2922-61-4, Lithium pyruvate 4485-12-5, Lithium stearate 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 7790-69-4, Lithium nitrate 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 30903-88-9, Tartaric acid lithium salt 159076-65-0, Lithium phosphorus silicon oxide sulfide 236388-73-1, Lithium silicide sulfide 658038-32-5, Boron lithium oxide 852709-57-0, Lithium metaphosphate nitride oxide (Li2.9(PO3)N0.36O0.3) 877630-13-2, Boron lithium iodide oxide
(coating; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)
IT 10124-31-9, Ammonium phosphate 10124-49-9, Iron sulfate
(lithium iron phosphate from; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

L54 ANSWER 48 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:109673 HCAPLUS Full-text
DOCUMENT NUMBER: 145:338944
TITLE: Electrochemical and electrical properties of Nb- and/or C-containing LiFePO4 composites
AUTHOR(S): Delacourt, C.; Wurm, C.; Laffont, L.; Leriche,

J.-B.; Masquelier, C.
CORPORATE SOURCE: Laboratoire de Reactivite et de Chimie des Solides, UMR CNRS #6007, Universite de Picardie Jules Verne, Amiens, 80039, Fr.
SOURCE: Solid State Ionics (2006), 177(3-4), 333-341
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 06 Feb 2006
AB A systematic study of Li1-yNbyFePO4·z % C composites (0 < y < 0.05, 0 < z< 4.74 weight% C) prepared through various synthesis conditions and electrodes composed of these LiFePO4-based is presented. From x-ray diffraction, high resolution transmission electron microscopy, electrochem. Li+ extraction/insertion and elec. conductivity data we conclude that the use of starting precursors such as Li2CO3, FeC2O4·2H2O and/or Nb(OC6H5)5 produces LiFePO4-based composites containing significant amts. of carbon. We never succeeded in doping LiFePO4 with Nb to yield Li1-xNbxFePO4 but produced, instead, crystalline β-NbOPO4 and/or an amorphous (Nb, Fe, C, O, P) "cobweb" around LiFePO4 particles which is responsible for superior electrochem. activity. AC-conductivity measurements conclude to a total elec. conductivity of .apprx.10-9 S cm-1 at 25° with an activation energy of ca. 0.65 eV for pure LiFePO4 and LiFePO4/β-NbOPO4 composites. C-containing LiFePO4 samples, including those that were tentatively but unsuccessfully doped with Nb, are much more conductive (up to 1.6 + 10-1 S cm-1) with an activation energy ΔE .apprx. 0.08 eV.
IT 10026-12-7, Niobium chloride
(Nb precursor; electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites)
RN 10026-12-7 HCAPLUS
CN Niobium chloride (NbCl5) (CA INDEX NAME)



IT 478819-86-2, Iron lithium niobium phosphate (Fe0.99LiNb0.01(PO4))
(alone, or with 1 or 1.5 weight% C; electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)
RN 478819-86-2 HCAPLUS
CN Iron lithium niobium phosphate (Fe0.99LiNb0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.01	7440-03-1
Li	1	7439-93-2
Fe	0.99	7439-89-6

IT 478819-83-9, Iron lithium niobium phosphate

(FeLi0.99Nb0.01(PO4)) 910044-22-3, Iron lithium niobium phosphate (FeLi0.95Nb0.05(PO4))
(electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)

RN 478819-83-9 HCAPLUS
CN Iron lithium niobium phosphate (FeLi0.99Nb0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.01	7440-03-1
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 910044-22-3 HCAPLUS
CN Iron lithium niobium phosphate (FeLi0.95Nb0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.05	7440-03-1
Li	0.95	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Electric impedance
(complex; electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)
IT Battery cathodes
(electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)
IT Secondary batteries
(lithium; electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)
IT 10026-12-7, Niobium chloride
(Nb precursor; electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites)
IT 478819-86-2, Iron lithium niobium phosphate (Fe0.99LiNb0.01(PO4))
(alone, or with 1 or 1.5 weight% C; electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)
IT 478819-83-9, Iron lithium niobium phosphate (FeLi0.99Nb0.01(PO4)) 910044-22-3, Iron lithium niobium phosphate (FeLi0.95Nb0.05(PO4))
(electrochem. and elec. properties of Nb- and/or C-containing LiFePO4 composites as pos. electrode materials for lithium batteries)
OS.CITING REF COUNT: 43 THERE ARE 43 CAPLUS RECORDS THAT CITE THIS RECORD (43 CITINGS)
REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 49 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2005:110763 HCAPLUS Full-text
DOCUMENT NUMBER: 142:366052
TITLE: Synthesis, Crystal Structure, and Electrochemical and Magnetic Study of New Iron (III) Hydroxyl-Phosphates, Isostructural with Lipscombite
AUTHOR(S): Song, Yanning; Zavalij, Peter Y.; Chernova, Natasha A.; Whittingham, M. Stanley
CORPORATE SOURCE: Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6000, USA
SOURCE: Chemistry of Materials (2005), 17(5), 1139-1147
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 09 Feb 2005
AB Two novel Fe (III) hydroxyl phosphates, Fe2-y.box.y(PO4)(OH)3-3y(H2O)3y-2 (y = 2/3 or 0.82; .box. represents vacancy), were synthesized by the solvothermal method. The Rietveld refinement of the crystal structure from the x-ray powder diffraction was performed in a tetragonal cell with space group I41/amd. The structure is isotypic with the mineral caminite Mg1.33[SO4(OH)0.66(H2O)0.33] and is closely related to the mixed-valence lipscombite Fe2-yPO4(OH) ($0 \leq y \leq 2/3$). The interconnection of the chains of face-sharing Fe octahedra forms the rod-packing structure. In Fe1.18(PO4)(OH)0.57(H2O)0.43 (y = 0.82), .apprx.60% of the chain sites are occupied, whereas about 2/3 of the chain sites are occupied in Fe1.33(PO4)(OH) (y = 2/3). The partial occupancy of the Fe3+ sites allows the incorporation of other cations into the structure. When ZnCl2 and NiCl2 were added into the hydrothermal mix, Fe was partially substituted by these metal ions, giving Fe4/3-zMz.box.2/3(PO4)(OH)1-z(H2O)z (M = Ni, Zn; z = 0.28 and 0.26 for Ni and Zn, resp.), and increasing the cation occupation of the chains to about 2/3. The protons of the hydroxyl groups in these compds. can be replaced by Li ions with structure retention. Li can also be incorporated electrochem. into the lattice, and the disordered compds. are good candidates for the cathode for secondary Li batteries. The compds. exhibit magnetic phase transitions in the temperature range 60 to 90 K; the transition temperature increases with the number of magnetic ions in the chains.
IT 849209-97-8 849209-98-9P, Iron hydroxide phosphate (Fe1.37(OH)(PO4))
(preparation and crystal structure and magnetic transition and reversible electrochem. intercalation with lithium and thermal decomposition of)
RN 849209-97-8 HCAPLUS
CN Iron hydroxide phosphate (Fe1.19(OH)0.57(PO4)), hydrate (9CI) (CA INDEX NAME)

CM 1

CRN 849209-96-7
CMF Fe . H O . O4 P
CCI TIS

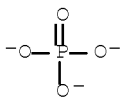
CM 2

CRN 14280-30-9
CMF H O

OH-

CM 3

CRN 14265-44-2
CMF O4 P



CM 4

CRN 7439-89-6
CMF Fe

Fe

RN 849209-98-9 HCAPLUS
CN Iron hydroxide phosphate (Fe1.37(OH)(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	1	14265-44-2
Fe	1.37	7439-89-6

IT 849210-00-0P 849210-02-2P
(preparation and electrochem. cycling and magnetic properties of)
RN 849210-00-0 HCAPLUS
CN Iron nickel hydroxide phosphate (Fe1.05Ni0.28(OH)0.72(PO4)), hydrate (9CI) (CA INDEX NAME)

CM 1

CRN 849209-99-0
CMF Fe . H O . Ni . O4 P
CCI TIS

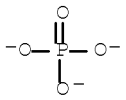
CM 2

CRN 14280-30-9
CMF H O

OH-

CM 3

CRN 14265-44-2
CMF O4 P



CM 4

CRN 7440-02-0
CMF Ni

Ni

CM 5

CRN 7439-89-6
CMF Fe

Fe

RN 849210-02-2 HCAPLUS
CN Iron zinc hydroxide phosphate (Fe1.11Zn0.27(OH)0.73(PO4)), hydrate (9CI) (CA INDEX NAME)

CM 1

CRN 849210-01-1
CMF Fe . H O . O4 P . Zn
CCI TIS

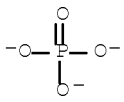
CM 2

CRN 14280-30-9
CMF H O

OH-

CM 3

CRN 14265-44-2
CMF O4 P



CM 4

CRN 7440-66-6
CMF Zn

Zn

CM 5

CRN 7439-89-6
CMF Fe

Fe

IT 849210-04-4P, Iron lithium hydroxide oxide phosphate
(Fe1.36Li0.73(OH)0.27O0.73(PO4))
(preparation and electrochem. cycling and thermal decomposition of)
RN 849210-04-4 HCAPLUS
CN Iron lithium hydroxide oxide phosphate
(Fe1.36Li0.73(OH)0.27O0.73(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.73	17778-80-2
HO	0.27	14280-30-9
O4P	1	14265-44-2

Li	0.73	7439-93-2
Fe	1.36	7439-89-6

IT 849210-03-3P, Iron lithium hydroxide oxide phosphate (Fe1.37Li0.5(OH)0.5O0.5(PO4)) 849210-05-5P, Iron lithium hydroxide oxide phosphate (Fe1.36Li0.83(OH)0.17O0.83(PO4))
(preparation and electrochem. cycling of)
RN 849210-03-3 HCAPLUS
CN Iron lithium hydroxide oxide phosphate (Fe1.37Li0.5(OH)0.5O0.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.5	17778-80-2
HO	0.5	14280-30-9
O4P	1	14265-44-2
Li	0.5	7439-93-2
Fe	1.37	7439-89-6

RN 849210-05-5 HCAPLUS
CN Iron lithium hydroxide oxide phosphate (Fe1.36Li0.83(OH)0.17O0.83(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.83	17778-80-2
HO	0.17	14280-30-9
O4P	1	14265-44-2
Li	0.83	7439-93-2
Fe	1.36	7439-89-6

IT 849210-07-7P
(preparation and thermal decomposition and electrochem. cycling of)
RN 849210-07-7 HCAPLUS
CN Iron lithium hydroxide oxide phosphate (Fe1.19Li0.55(OH)0.02O0.55(PO4)), hydrate (9CI) (CA INDEX NAME)

CM 1

CRN 849210-06-6
CMF Fe . H O . Li . O4 P . O
CCI TIS

CM 2

CRN 17778-80-2
CMF O

o

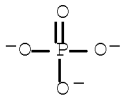
CM 3

CRN 14280-30-9

CMF H O

CM 4

CRN 14265-44-2
CMF O4 P



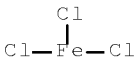
CM 5

CRN 7439-93-2
CMF Li

CM 6

CRN 7439-89-6
CMF Fe

IT 7705-08-0, Ferric chloride, reactions
(reactant for preparation of iron hydroxide phosphates with/without lithium and transition metal substitution)
RN 7705-08-0 HCAPLUS
CN Iron chloride (FeCl3) (CA INDEX NAME)



IT 10377-51-2, Lithium iodide
(reactant for preparation of iron lithium hydroxide oxide phosphate)
RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

IT 7718-54-9, Nickel dichloride, reactions
(reactant for preparation of iron nickel hydroxide phosphate)
RN 7718-54-9 HCAPLUS
CN Nickel chloride (NiCl2) (CA INDEX NAME)

IT 7646-85-7, Zinc chloride, reactions
(reactant for preparation of iron zinc hydroxide phosphate)
RN 7646-85-7 HCAPLUS
CN Zinc chloride (ZnCl2) (CA INDEX NAME)

CC 78-5 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 52, 72, 75, 77
IT 849209-97-8P 849209-98-9P, Iron hydroxide phosphate (Fe1.37(OH)(PO4))
(preparation and crystal structure and magnetic transition and reversible electrochem. intercalation with lithium and thermal decomposition of)
IT 849210-00-0P 849210-02-2P
(preparation and electrochem. cycling and magnetic properties of)
IT 849210-04-4P, Iron lithium hydroxide oxide phosphate (Fe1.36Li0.73(OH)0.27O0.73(PO4))
(preparation and electrochem. cycling and thermal decomposition of)
IT 849210-03-3P, Iron lithium hydroxide oxide phosphate (Fe1.37Li0.5(OH)0.5O0.5(PO4)) 849210-05-5P, Iron lithium hydroxide oxide phosphate (Fe1.36Li0.83(OH)0.17O0.83(PO4))
(preparation and electrochem. cycling of)
IT 849210-07-7P
(preparation and thermal decomposition and electrochem. cycling of)
IT 7664-38-2, Phosphoric acid, reactions 7705-08-0, Ferric chloride, reactions
(reactant for preparation of iron hydroxide phosphates with/without lithium and transition metal substitution)
IT 1310-65-2, Lithium hydroxide 7790-69-4, Lithium nitrate 10377-51-2, Lithium iodide
(reactant for preparation of iron lithium hydroxide oxide phosphate)
IT 7718-54-9, Nickel dichloride, reactions

(reactant for preparation of iron nickel hydroxide phosphate)
IT 7646-85-7, Zinc chloride, reactions
(reactant for preparation of iron zinc hydroxide phosphate)
OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS RECORD (13 CITINGS)
REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 50 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:759266 HCAPLUS Full-text
DOCUMENT NUMBER: 141:280353
TITLE: Production of lithium compound phosphate cathodes for secondary lithium ion batteries
INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Toge, Yoshiyuki; Saito, Mitsumasa
PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259471	A	20040916	JP 2003-45885	20030224
JP 4252331	B2	20090408		
PRIORITY APPLN. INFO.:			JP 2003-45885	20030224

ED Entered STN: 17 Sep 2004
AB The lithium compound phosphates, having olivine-type structure, are produced by a process including steps of (1) spray thermal decomposition of solns. or suspensions containing Li, metals excluding Li, and P, and (2) firing the resultant decomposition products. The phosphates may be expressed by LixAyPO4 (A = Cr, Mn, Fe, Co, Ni, Cu; $0 < x < 2$; $0 < y \leq 1$). In the production, elec. conductive substances and/or their precursors may be added to the solns./suspensions. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.
IT 757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
RN 757954-82-8 HCAPLUS
CN Iron lithium phosphate (Fe0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IT 7447-41-8, Lithium chloride, processes 7758-94-3, Iron chloride (fecl2)
(in preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 7758-94-3 HCAPLUS
CN Iron chloride (FeCl2) (CA INDEX NAME)

Cl—Fe—Cl

IPCI H01M0004-58 [I,A]; H01M0004-62 [I,A]; C01B0025-45 [N,A]; C01B0025-00 [N,C*]
IPCR C01B0025-00 [I,C*]; C01B0025-45 [I,A]; H01M0004-02 [N,A]; H01M0004-02 [N,C*]; H01M0004-58 [I,A]; H01M0004-58 [I,C*]; H01M0004-62 [I,A]; H01M0004-62 [I,C*]; H01M0010-36 [N,C*]; H01M0010-40 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cathode lithium transition metal phosphate
IT Carbonaceous materials (technological products)
(elec. conductive additives in cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT Carbon black, uses
(elec. conductive additives in cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT Secondary batteries
(lithium; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT Battery cathodes
(preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT Thermal decomposition
(spray; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4)) 757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT 1310-65-2, Lithium hydroxide 7447-41-8, Lithium chloride, processes 7664-38-2, Phosphoric acid, processes 7758-94-3, Iron chloride (fecl2) 7790-69-4, Lithium nitrate 10141-05-6
(in preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
IT 57-50-1, Sucrose, processes

(precursors for elec. conductive additives in cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L54 ANSWER 51 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:796193 HCAPLUS Full-text
DOCUMENT NUMBER: 139:310049
TITLE: Batteries comprising alkali-transition metal phosphates and preferred electrolytes
INVENTOR(S): Pugh, James; Saidi, Mohammed Y.; Huang, Haitao
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030190527	A1	20031009	US 2002-116276	20020403
CA 2479790	A1	20031016	CA 2003-2479790	20030327
WO 2003085757	A1	20031016	WO 2003-US9634	20030327
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003224801	A1	20031020	AU 2003-224801	20030327
EP 1490917	A1	20041229	EP 2003-721492	20030327
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005522009	T	20050721	JP 2003-582838	20030327
CN 1650450	A	20050803	CN 2003-810033	20030327
US 20050181283	A1	20050818	US 2005-80605	20050315
PRIORITY APPLN. INFO.:			US 2002-116276 A	20020403
			WO 2003-US9634 W	20030327

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 10 Oct 2003
AB Lithium batteries comprising: (a) an electrode comprising a material $Aa Mb(XY4)c Zd$, wherein (i) A is an alkali metal and $0<a\leq 9$; (ii) M comprises a transition metal, and $1\leq b\leq 3$; (iii) XY4 is X'O4-x Y'x, X'O4-yY'2y, X''S4, or mixts. thereof, where X' is P, As, Sb, Si, Ge, V, S, or mixts. thereof; X'' is P, As, Sb, Si, Ge, V, or mixts. thereof; Y' is halogen, S, N, or mixts. thereof; $0\leq x<3$; and $0<y\leq 2$; and $0<c\leq 3$; and (iv) Z is OH, halogen, or mixts. thereof, and $0\leq d\leq 6$; and (b) a counter-electrode; and (c) an electrolyte comprising an alkyl and/or alkylene carbonate and a cyclic ester. Preferably, M addnl. comprises at least one non-transition metal. Preferred embodiments

include those having an olivine structure, where c = 1, and those having a NASICON structure, where c = 3.

IT 7550-35-8, Lithium bromide (LiBr) 610271-90-4
610271-94-8 610272-06-5 610310-92-4
610310-95-7 610310-97-9 610310-99-1
610311-00-7
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 610271-90-4 HCAPLUS
CN Aluminum cobalt iron lithium magnesium manganese phosphate (Al0.02Co0.7Fe0.08Li1.02Mg0.05Mn0.12(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.7	7440-48-4
Mn	0.12	7439-96-5
Mg	0.05	7439-95-4
Li	1.02	7439-93-2
Fe	0.08	7439-89-6
Al	0.02	7429-90-5

RN 610271-94-8 HCAPLUS
CN Aluminum cobalt iron lithium magnesium phosphate (Al0.02Co0.8Fe0.1Li1.02Mg0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.8	7440-48-4
Mg	0.05	7439-95-4
Li	1.02	7439-93-2
Fe	0.1	7439-89-6
Al	0.02	7429-90-5

RN 610272-06-5 HCAPLUS
CN Aluminum cobalt iron lithium titanium phosphate (Al0.02Co0.8Fe0.1Li1.02Ti0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.8	7440-48-4
Ti	0.02	7440-32-6
Li	1.02	7439-93-2
Fe	0.1	7439-89-6
Al	0.02	7429-90-5

RN 610310-92-4 HCAPLUS
CN Aluminum copper iron lithium magnesium phosphate (Al0.02Cu0.85Fe0.05Li1.02Mg0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.85	7440-50-8
Mg	0.05	7439-95-4
Li	1.02	7439-93-2
Fe	0.05	7439-89-6
Al	0.02	7429-90-5

RN 610310-95-7 HCAPLUS
CN Aluminum cobalt iron lithium magnesium phosphate (Al0.02Co0.75Fe0.05Li1.02Mg0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.75	7440-48-4
Mg	0.05	7439-95-4
Li	1.02	7439-93-2
Fe	0.05	7439-89-6
Al	0.02	7429-90-5

RN 610310-97-9 HCAPLUS
CN Cobalt iron lithium magnesium titanium phosphate (Co0.8Fe0.1LiMg0.05Ti0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.8	7440-48-4
Ti	0.02	7440-32-6
Mg	0.05	7439-95-4
Li	1	7439-93-2
Fe	0.1	7439-89-6

RN 610310-99-1 HCAPLUS
CN Copper iron lithium magnesium titanium phosphate (Cu0.82Fe0.1LiMg0.02Ti0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.82	7440-50-8
Ti	0.02	7440-32-6
Mg	0.02	7439-95-4
Li	1	7439-93-2
Fe	0.1	7439-89-6

RN 610311-00-7 HCAPLUS
CN Copper iron lithium magnesium titanium phosphate (Cu0.85Fe0.08LiMg0.02Ti0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.85	7440-50-8
Ti	0.02	7440-32-6
Mg	0.02	7439-95-4
Li	1	7439-93-2
Fe	0.08	7439-89-6

IT 484040-01-9P, Iron lithium magnesium fluoride phosphate Fe0.9Li1.25Mg0.1F0.25(PO4) 610272-07-6P
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)
RN 484040-01-9 HCAPLUS
CN Iron lithium magnesium fluoride phosphate (Fe0.9Li1.25Mg0.1F0.25(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	0.25	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	1.25	7439-93-2
Fe	0.9	7439-89-6

RN 610272-07-6 HCAPLUS
CN Aluminum cobalt iron lithium magnesium phosphate silicate (Al0.1Co0.8Fe0.05LiMg0.05(PO4)0.9(SiO4)0.1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	0.9	14265-44-2
Co	0.8	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2
Fe	0.05	7439-89-6
Al	0.1	7429-90-5

INCL 429231900; 429231950; 429221000; 429223000; 429231500; 429224000; 429231600
IPCI H01M0004-58 [ICM,7]
IPCR H01M0010-36 [I,C*]; H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-136 [N,A]; H01M0004-48 [I,C*]; H01M0004-56 [N,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0004-62 [N,C*]; H01M0004-62 [N,A]; H01M0010-00 [I,C*]; H01M0010-0525 [I,A]; H01M0010-0568 [I,A]; H01M0010-0569 [I,A]; H01M0010-36 [I,A]
NCL 429/231.900; 429/221.000; 429/223.000; 429/224.000; 429/231.500; 429/231.600; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST lithium battery cathode alkali transition metal phosphate
IT Battery cathodes
Battery electrolytes
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)
IT 57-57-8, β-Propiolactone 96-48-0, γ-Butyrolactone

96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, 1,2-Propylene carbonate 502-44-3, ε-Caprolactone 542-28-9, δ-Valerolactone 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 2453-03-4, 1,3-Propylene carbonate 4427-90-1, 1,5-Pentylene carbonate 4427-94-5, 1,4-Butylene carbonate 4437-70-1, 2,3-Butylene carbonate 4437-85-8, 1,2-Butylene carbonate 7440-44-0, Carbon, uses 7550-35-8, Lithium bromide (LiBr) 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15365-14-7, Iron lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132843-44-8 610271-90-4 610271-94-8 610272-06-5 610310-87-7 610310-88-8 610310-92-4 610310-95-7 610310-97-9 610310-99-1 610311-00-7 610321-55-6 610321-60-3 610754-69-3
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

IT 477779-87-6P, Sodium vanadium fluoride phosphate NaVF(PO4) 484040-01-9P, Iron lithium magnesium fluoride phosphate Fe0.9Li1.25Mg0.1F0.25(PO4) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-28-0P 610272-07-6P 610311-01-8P
(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L54 ANSWER 52 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:426714 HCAPLUS Full-text
DOCUMENT NUMBER: 139:294434
TITLE: Design considerations for Olivine-type cathodes
AUTHOR(S): Yamada, Atsuo; Chung, Sai-Cheong; Hosoya, Mamoru; Li, Guohua; Kudo, Yoshihiro; Liu, Kuang-Yu
CORPORATE SOURCE: π-electron Materials Research Lab., Frontier Science Res. Labs., Nishi Battery Labs., Japan
SOURCE: Proceedings of the Sony Research Forum (2002), Volume Date 2001, 11th, 341-346
CODEN: PSRFFO; ISSN: 1340-3508
PUBLISHER: Soni K.K., R & D Senryakubu
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
ED Entered STN: 04 Jun 2003
AB The charge-discharge reaction mechanism of Olivine-type cathodes, Lix(MnyFe1-y)PO4 ($0 \leq c, y \leq 1$), was studied by x-ray diffraction, Moessbauer spectroscopy, equilibrium voltage measurements, x-ray absorption spectroscopy, and ab initio calcn. The phase diagram in (x,y) two-dimensional plane was clarified in terms of (1)the crystal structure, (2)the valence states of Mn and Fe, and (3)single phase - two phase reaction forms. The strong electron (Mn3+:3d4-egσ*) - lattice interaction in the charged state will be highlighted as main obstacle to generate the full theor. capacity of the Mn-rich ($y > 0.75$) phase, followed by the essential strategies for a design of practical olivine-type cathode materials.
IT 361393-19-3P, Iron lithium manganese phosphate (Fe0.4Li0-1Mn0.6(PO4))
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)

RN 361393-19-3 HCAPLUS
CN Iron lithium manganese phosphate (Fe0.4Li0-1Mn0.6(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0.6	7439-96-5
Li	0 - 1	7439-93-2
Fe	0.4	7439-89-6

IT 10377-51-2, Lithium iodide (LiI)
(electrode lithiation; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75, 76, 77
ST lithium secondary battery olivine structure cathode iron manganese phosphate; potential phase diagram lithium iron manganese phosphate Mossbauer XANES; crystal lattice distortion lithium content iron manganese phosphate XRD
IT Spin state
(d. of states, of iron lithium manganese phosphates; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Battery cathodes
Electronic structure
X-ray diffraction
XANES spectra
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Olivine-group minerals
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Fluoropolymers, uses
(electrode composite with Carbon black and iron lithium manganese phosphates; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Carbon black, uses
(electrode composite with PVDF and iron lithium manganese phosphates; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Quadrupole splitting
(in Mossbauer spectra; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Plasma atomic emission spectrometry
(inductively coupled; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Crystal structure
(lattice distortion during charging/discharging; of Lix(MnyFe1-y)PO4 in Olivine-type cathodes)

IT Secondary batteries
(lithium; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Phase diagram
(of Lix(MnyFe1-y)PO4 system; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Density of states
(spin, of iron lithium manganese phosphates; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Open circuit potential
(vs. Li content; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT Mossbauer spectroscopy
(57Fe content; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 13826-59-0P, Lithium manganese phosphate (LiMnPO4)
(composites with carbon black/PVDF; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate (LiPF6)
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 22783-95-5P, Iron manganese phosphate
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 7553-56-2, Iodine, formation (nonpreparative) 10102-44-0, Nitrogen oxide (NO2), formation (nonpreparative)
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 14283-07-9, Lithium tetrafluoroborate (LiBF4)
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 15365-14-7P, Iron lithium phosphate (LiFePO4) 300858-61-1P, Iron lithium manganese phosphate (Li(Mn0.6Fe0.4)PO4) 407629-83-8P, Iron lithium manganese phosphate (Li(Mn0.8Fe0.2)PO4) 464174-83-2P, Iron lithium manganese phosphate (Li(Mn0.4Fe0.6)PO4) 464174-90-1P, Iron lithium manganese phosphate (Li(Mn0.2Fe0.8)PO4)
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 10045-86-0P, Iron phosphate (FePO4) 361393-19-3P, Iron lithium manganese phosphate (Fe0.4Li0-1Mn0.6(PO4)) 609337-27-1P, Iron manganese phosphate (Fe0.8Mn0.2PO4) 609337-32-8P, Iron manganese phosphate (Fe0.6Mn0.4PO4) 609337-36-2P, Iron manganese phosphate (Fe0.4Mn0.6PO4) 609337-38-4P, Iron manganese phosphate (Fe0.2Mn0.8PO4)
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 554-13-2, Lithium carbonate (Li2CO3) 598-62-9, Manganese carbonate (MnCO3) 6047-25-2 7722-76-1, Ammonium phosphate (NH4H2PO4) 13826-86-3, Nitronium fluoroborate (NO2BF4)
(design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 24937-79-9, PVDF
(electrode composite with Carbon black and iron lithium manganese phosphates; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)
IT 10377-51-2, Lithium iodide (LiI)
(electrode lithiation; design considerations for Olivine-type cathodes containing Lix(MnyFe1-y)PO4)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 53 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:413937 HCAPLUS Full-text
DOCUMENT NUMBER: 138:404345
TITLE: Battery structures, self-organizing structures and related methods
INVENTOR(S): Chiang, Yet Ming; Moorehead, William Douglas; Gozdz, Antoni S.; Holman, Richard K.; Loxley, Andrew; Riley, Gilbert N.; Viola, Michael S.
PATENT ASSIGNEE(S): A123Systems, Inc., USA; Massachusetts Institute of Technology
SOURCE: U.S. Pat. Appl. Publ., 70 pp., Cont.-in-part of U.S. Ser. No. 21,740.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030099884	A1	20030529	US 2002-206662	20020726
US 7579112	B2	20090825		
US 20030082446	A1	20030501	US 2001-21740	20011022
US 7553584	B2	20090630		
US 20040018431	A1	20040129	US 2003-354673	20030130
US 7387851	B2	20080617		
US 20050272214	A1	20051208	US 2005-108602	20050418
US 7662265	B2	20100216		
US 20080311470	A1	20081218	US 2008-140058	20080616
US 20100003603	A1	20100107	US 2009-512421	20090730
US 20110005065	A1	20110113	US 2010-886035	20100920

PRIORITY APPLN. INFO.:

US 2001-308360P	P	20010727
US 2001-21740	A2	20011022
US 2000-242124P	P	20001020
US 2002-206662	A2	20020726
US 2003-354673	A3	20030130
US 2004-563026P	P	20040416
US 2004-583850P	P	20040629
US 2009-512421	A1	20090730

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 30 May 2003
AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an electrolyte, the electrolyte, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes a first electrode in elec. communication with a first current collector; a

second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

IT 496816-58-1, Iron lithium zirconium phosphate Fe0.98LiZr0.02(PO4) 531493-25-1, Iron lithium titanium phosphate (Fe0.98LiTi0.02(PO4))
(battery structures, self-organizing structures and related methods)

RN 496816-58-1 HCAPLUS

CN Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zr	0.02	7440-67-7
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 531493-25-1 HCAPLUS

CN Iron lithium titanium phosphate (Fe0.98LiTi0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.02	7440-32-6
Li	1	7439-93-2
Fe	0.98	7439-89-6

IT 7447-41-8, Lithium chloride, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide
(glass; battery structures, self-organizing structures and related methods)

RN 7447-41-8 HCAPLUS

CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

RN 10377-51-2 HCAPLUS

CN Lithium iodide (LiI) (CA INDEX NAME)

I—Li

INCL 429233000; X42-923.5; X42-923.195; X42-921.2; X42-923.14; X42-921.0
IPCI H01M0004-02 [I,A]; C25C0007-02 [I,A]; H01G0009-00 [I,A]
IPCR G02F0001-01 [I,C*]; G02F0001-15 [I,A]; G02F0001-155 [N,A]; H01G0009-00 [I,C*]; H01G0009-00 [I,A]; H01G0009-02 [I,C*]; H01G0009-02 [I,A]; H01G0009-022 [I,C*]; H01G0009-038 [I,A]; H01G0009-058 [I,C*]; H01G0009-058 [I,A]; H01G0009-155 [I,C*]; H01G0009-155 [I,A]; H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-38 [I,C*]; H01M0004-38 [I,A]; H01M0004-70 [N,C*]; H01M0004-80 [N,A]; H01M0006-18 [N,C*]; H01M0006-18 [N,A]; H01M0006-40 [I,C*]; H01M0006-40 [I,A]; H01M0010-00 [I,C*]; H01M0010-04 [I,C*]; H01M0010-04 [I,A]; H01M0010-052 [I,A]; H01M0010-0525 [I,A]; H01M0010-0565 [N,A]; H01M0010-058 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]; C25C0007-00 [I,C]; C25C0007-02 [I,A]
NCL 429/233.000; 429/210.000; 429/212.000; 429/231.400; 429/231.950; 429/235.000; 429/209.000; 204/288.000; 204/289.000; 429/304.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery anodes
Battery cathodes
Coating process
Embossing
(battery structures, self-organizing structures and related methods)
IT 68-12-2, Dmf, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt monoxide, uses 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide (NiO), uses 1314-62-1, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1343-98-2, Silicon hydroxide 1344-43-0, Manganese oxide mno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compound 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7631-86-9, Silicon oxide, uses 7782-42-5, Graphite, uses 9003-53-6, Polystyrene 10043-35-3, Boric acid (H3BO3), uses 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, Lithium nickel oxide linio2 12037-30-8, Vanadium oxide v6o11 12048-27-0, Bili 12057-17-9, Lithium manganese oxide limn2o4 12057-22-6, LiZn 12057-30-6 12057-33-9 12063-07-9, Iron lithium oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide, uses 14475-63-9, Zirconium hydroxide Zr(OH)4 15365-14-7, Iron lithium phosphate felipo4 18282-10-5, Tin dioxide 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, Lithium titanium oxide liti2o4 39345-91-0, Lead hydroxide 53262-48-9 55575-96-7, Lithium silicide Li13Si4 55608-41-8 56627-44-2 61812-08-6, Lithium silicide Li21Si8 66403-10-9, Lithium boride Li5B4 67070-82-0 71012-86-7, Lithium boride Li7B6 74083-26-4 76036-33-4, Lithium silicide Li12Si7 106494-93-3, Lithium silicide Li21Si5 114778-10-8, Iron lithium sulfate Fe2Li2(SO4)3 144419-56-7, Cobalt lithium magnesium oxide Co0.95LiMg0.05O2 496816-56-9 496816-58-1, Iron lithium

zirconium phosphate Fe0.98LiZr0.02(PO4) 531493-25-1, Iron lithium titanium phosphate (Fe0.98LiTi0.02(PO4))
(battery structures, self-organizing structures and related methods)

IT 1303-86-2, Boron oxide (B2O3), uses 1304-76-3, Bismuth oxide (Bi2O3), uses 1314-23-4, Zirconium oxide, uses 1314-56-3, Phosphorus oxide (P2O5), uses 1317-36-8, Lead oxide (PbO), uses 7447-41-8, Lithium chloride, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 12057-24-8, Lithia, uses
(glass; battery structures, self-organizing structures and related methods)

OS.CITING REF COUNT: 19 THERE ARE 19 CAPLUS RECORDS THAT CITE THIS RECORD (19 CITINGS)

L54 ANSWER 54 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:118181 HCAPLUS Full-text
DOCUMENT NUMBER: 138:156304
TITLE: Battery structures, self-organizing structures, and related methods
INVENTOR(S): Chiang, Yet-Ming; Moorehead, William Douglas; Holman, Richard K.; Viola, Michael S.; Gozdz, Antoni S.; Loxley, Andrew; Riley, Gilbert N., Jr.
PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA; A123 Systems
SOURCE: PCT Int. Appl., 138 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003012908	A2	20030213	WO 2002-US23880	20020726
WO 2003012908	A9	20040325		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 20030082446	A1	20030501	US 2001-21740	20011022
US 7553584	B2	20090630		
CA 2455819	A1	20030213	CA 2002-2455819	20020726
AU 2002330924	A1	20030217	AU 2002-330924	20020726
EP 1433217	A2	20040630	EP 2002-768358	20020726
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2005525674	T	20050825	JP 2003-517975	20020726
CN 1864298	A	20061115	CN 2002-818181	20020726
KR 2009092348	A	20090831	KR 2009-7016254	20020726
IN 2004KN00118	A	20060407	IN 2004-KN118	20040130
IN 222130	A1	20080725		

PRIORITY APPLN. INFO.: US 2001-308360P P 20010727

US 2001-21740	A	20011022
US 2000-242124P	P	20001020
WO 2002-US23880	W	20020726
KR 2004-7001229	A3	20040127

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 14 Feb 2003

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an electrolyte, the electrolyte, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes a first electrode in elec. communication with a first current collector; a second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

IT 496816-58-1, Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4))
(battery structures, self-organizing structures, and related methods)

RN 496816-58-1 HCAPLUS

CN Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zr	0.02	7440-67-7
Li	1	7439-93-2
Fe	0.98	7439-89-6

IT 7447-41-8, Lithium chloride, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide
(glass; battery structures, self-organizing structures, and related methods)

RN 7447-41-8 HCAPLUS

CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

RN 10377-51-2 HCAPLUS
CN Lithium iodide (LiI) (CA INDEX NAME)

IPCI H01M0010-04 [ICM,7]; H01M0010-40 [ICS,7]; H01M0004-04 [ICS,7]; H01M0004-02 [ICS,7]; H01B0009-00 [ICS,7]; G02F0001-00 [ICS,7]
IPCR G02F0001-01 [I,C*]; G02F0001-15 [I,A]; G02F0001-155 [N,A]; H01G0009-00 [I,C*]; H01G0009-00 [I,A]; H01G0009-02 [I,C*]; H01G0009-02 [I,A]; H01G0009-022 [I,C*]; H01G0009-038 [I,A]; H01G0009-058 [I,C*]; H01G0009-058 [I,A]; H01G0009-155 [I,C*]; H01G0009-155 [I,A]; H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-38 [I,C*]; H01M0004-38 [I,A]; H01M0004-70 [N,C*]; H01M0004-80 [N,A]; H01M0006-18 [N,C*]; H01M0006-18 [N,A]; H01M0006-40 [I,C*]; H01M0006-40 [I,A]; H01M0010-00 [I,C*]; H01M0010-04 [I,C*]; H01M0010-04 [I,A]; H01M0010-052 [I,A]; H01M0010-0525 [I,A]; H01M0010-0565 [N,A]; H01M0010-058 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
IT Battery anodes
Battery cathodes
Conducting polymers
Embossing
Encapsulants
Ink-jet printing
Lithography
Polymer electrolytes
Primary batteries
Screen printing
(battery structures, self-organizing structures, and related methods)
IT 68-12-2, n,n-Dimethylformamide, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt oxide coo, uses 1313-13-9, Manganese oxide mno2, uses 1313-99-1, Nickel oxide nio, uses 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1344-43-0, Manganese oxidemno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compound 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7782-42-5, Graphite, uses 9002-84-0, Ptfe 9003-53-6, Polystyrene 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, Lithium nickel oxide linio2 12037-30-8, Vanadium oxide v6o11 12042-37-4, Alli 12048-27-0, Bili 12057-17-9, Lithium manganese oxide limn2o4 12057-22-6, Lizn 12057-30-6 12057-33-9 12063-07-9, Iron lithium oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide, uses 14475-63-9, Zirconium hydroxide 15365-14-7, Iron lithium phosphate felipo4 18282-10-5, Tin dioxide 21324-40-3, Lithium hexafluorophosphate 21651-19-4, Tin oxide sno 24937-79-9,

Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, Lithium titanium oxide liti2o4 39345-91-0, Lead hydroxide 50851-57-5 53262-48-9 53640-36-1 55575-96-7, Lithium silicide Li13Si4 55608-41-8 56627-44-2 61812-08-6, Lithium silicide Li21Si8 66403-10-9, Lithium boride (Li5B4) 67070-82-0 71012-86-7, Lithium boride (Li7B6) 74083-26-4 76036-33-4, Lithium silicide Li12Si7 98973-15-0, MEEP 106494-93-3, Lithium silicide Li21Si5 126213-51-2, Poly(3,4-ethylenedioxythiophene) 144419-56-7, Cobalt lithium magnesium oxide Co0.95LiMg0.05O2 496816-56-9 496816-57-0, Cobalt lithium magnesium oxide (Co0.95Li0.95Mg0.05O1.9) 496816-58-1, Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4))
(battery structures, self-organizing structures, and related methods)

IT 1303-86-2, Boron oxide b2o3, uses 1304-76-3, Bismuth oxide bi2o3, uses 1314-56-3, Phosphorus pentoxide, uses 1317-36-8, Lead oxide pbo, uses 7447-41-8, Lithium chloride, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 12057-24-8, Lithia, uses
(glass; battery structures, self-organizing structures, and related methods)

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)

L54 ANSWER 55 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:428819 HCAPLUS Full-text
DOCUMENT NUMBER: 137:8642
TITLE: Methods of making lithium metal compounds useful as cathode active materials in batteries
INVENTOR(S): Barker, Jeremy; Yazid, Saidi M.; Swoyer, Jeffrey L.
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002044084	A2	20020606	WO 2001-US43633	20011119
WO 2002044084	A3	20020815		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 6645452	B1	20031111	US 2000-724085	20001128
CA 2428201	A1	20020606	CA 2001-2428201	20011119
CA 2428201	C	20081028		
CA 2636694	A1	20020606	CA 2001-2636694	20011119
CA 2638745	A1	20020606	CA 2001-2638745	20011119
CA 2638751	A1	20020606	CA 2001-2638751	20011119

AU 2002017799	A	20020611	AU 2002-17799	20011119
EP 1343720	A2	20030917	EP 2001-998506	20011119
EP 1343720	B1	20080326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004514639	T	20040520	JP 2002-546034	20011119
JP 4248876	B2	20090402		
EP 1574477	A2	20050914	EP 2005-10853	20011119
EP 1574477	A3	20051109		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
CN 1703370	A	20051130	CN 2001-819694	20011119
CN 100411977	C	20080820		
AT 390385	T	20080415	AT 2001-998506	20011119
TW 544967	B	20030801	TW 2001-129206	20011126
IN 2003CN00824	A	20050422	IN 2003-CN824	20030527
IN 211794	A1	20071228		
KR 851484	B1	20080808	KR 2003-7007055	20030527
US 20040126300	A1	20040701	US 2003-683643	20031009
US 6960331	B2	20051101		
IN 2007CN02204	A	20070928	IN 2007-CN2204	20070522
KR 2007112297	A	20071122	KR 2007-7025241	20071031
KR 851485	B1	20080808		
KR 2007112298	A	20071122	KR 2007-7025243	20071031
KR 851486	B1	20080808		
KR 2007112299	A	20071122	KR 2007-7025245	20071031
KR 851487	B1	20080808		
JP 2009018989	A	20090129	JP 2008-224255	20080902
PRIORITY APPLN. INFO.:			US 2000-724085	A1 20001128
			CA 2001-2428201	A3 20011119
			EP 2001-998506	A3 20011119
			JP 2002-546034	A3 20011119
			WO 2001-US43633	W 20011119
			IN 2003-CN824	A3 20030527
			KR 2003-7007055	A3 20030527

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 07 Jun 2002

AB The invention provides a novel method for making lithium mixed metal materials for battery cathodes. The lithium mixed metal materials comprise lithium and at least one other metal besides lithium. The invention involves the reaction of a metal compound, a phosphate compound, with a reducing agent to reduce the metal and form a metal phosphate. The invention also includes methods of making lithium metal oxides involving reaction of a lithium compound and a metal oxide with a reducing agent.

IT 7789-24-4, Lithium fluoride, processes
(methods of making lithium metal compds. useful as cathode active materials in batteries)

RN 7789-24-4 HCAPLUS

CN Lithium fluoride (LiF) (CA INDEX NAME)

F—Li

IT 372075-87-1P, Iron lithium fluoride phosphate FeLiFPO4
(methods of making lithium metal compds. useful as cathode active materials in batteries)
RN 372075-87-1 HCAPLUS
CN Iron lithium fluoride phosphate (FeLiF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	1	7439-93-2
Fe	1	7439-89-6

IPCI C01B0025-00 [ICM,7]
IPCR C01B0025-00 [I,A]; C01B0025-00 [I,C*]; C01B0025-45 [I,A]; C01B0025-455 [I,A]; H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-50 [I,C*]; H01M0004-50 [I,A]; H01M0004-505 [I,A]; H01M0004-52 [I,C*]; H01M0004-52 [I,A]; H01M0004-525 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST battery cathode lithium metal compd prepn
IT Reduction
(carbothermic; methods of making lithium metal compds. useful as cathode active materials in batteries)
IT Secondary batteries
(lithium; methods of making lithium metal compds. useful as cathode active materials in batteries)
IT Battery cathodes
Thermite process
(methods of making lithium metal compds. useful as cathode active materials in batteries)
IT 7664-38-2D, Phosphoric acid, transition metal compds. 7722-76-1, Ammonium dihydrogen phosphate 7757-87-1, Magnesium phosphate mg3(po4)2 7779-90-0, Zinc phosphate zn3(po4)2 7783-28-0, Diammonium hydrogen phosphate 7789-04-0, Chromium phosphate crpo4 7789-24-4, Lithium fluoride, processes 10045-86-0, Iron phosphate fepo4 13453-80-0, Lithium dihydrogen phosphate 14154-09-7, Manganese phosphate Mn3(PO4)2 14940-41-1, Iron phosphate fe3(po4)2 70172-55-3, Titanium phosphate tipo4
(methods of making lithium metal compds. useful as cathode active materials in batteries)
IT 7664-38-2DP, Phosphoric acid, lithiated transition metal compds. 12162-92-4P, Lithium vanadium oxide liv2o5 15365-14-7P, Iron lithium phosphate felipo4 84159-18-2P, Lithium vanadium phosphate Li3V2(PO4)3 372075-82-6P, Lithium manganese fluoride phosphate LiMnFPO4 372075-83-7P, Lithium vanadium fluoride phosphate (LiVF(PO4)) 372075-84-8P, Chromium lithium fluoride phosphate CrLiFPO4 372075-85-9P, Lithium titanium fluoride phosphate LiTiFPO4 372075-86-0P 372075-87-1P, Iron lithium fluoride phosphate FeLiFPO4 433708-98-6P, Copper lithium fluoride phosphate (CuLiF(PO4)) 433708-99-7P, Cobalt lithium fluoride phosphate (CoLiF(PO4)) 433709-00-3P, Lithium nickel fluoride phosphate (LiNiF(PO4)) 433709-01-4P 632286-77-2P, Iron lithium magnesium phosphate (Fe0.9LiMg0.1(PO4))

(methods of making lithium metal compds. useful as cathode active materials in batteries)
IT 1333-74-0, Hydrogen, reactions
(methods of making lithium metal compds. useful as cathode active materials in batteries)
IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses
(methods of making lithium metal compds. useful as cathode active materials in batteries)
IT 7440-44-0, Carbon, reactions
(reducing agent; methods of making lithium metal compds. useful as cathode active materials in batteries)
OS.CITING REF COUNT: 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS RECORD (15 CITINGS)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 56 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2001:796403 HCAPLUS Full-text
DOCUMENT NUMBER: 135:346864
TITLE: Cathode for nonaqueous electrolyte lithium ion battery
INVENTOR(S): Yamada, Atsuo; Yamahira, Takayuki
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 26 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150368	A2	20011031	EP 2001-109919	20010424
EP 1150368	A3	20051026		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001307730	A	20011102	JP 2000-128998	20000425
JP 3959929	B2	20070815		
MX 2001004029	A	20030820	MX 2001-4029	20010423
TW 533617	B	20030521	TW 2001-109790	20010424
CA 2344981	A1	20011025	CA 2001-2344981	20010425
CN 1320976	A	20011107	CN 2001-117211	20010425
US 20020004169	A1	20020110	US 2001-842485	20010425
US 6746799	B2	20040608		
KR 975773	B1	20100817	KR 2001-22320	20010425
PRIORITY APPLN. INFO.:			JP 2000-128998 A	20000425

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 02 Nov 2001
AB The lithium ion cell is improved appreciably in operational stability under special conditions, such as high temps., and exhibits superior characteristics against over-discharging, while guaranteeing compatibility to the operating voltage of a conventional lithium ion cell and an energy d. equivalent to that of the conventional lithium ion cell. To this end, the lithium ion cell includes a pos. electrode, a neg. electrode and a nonaq. electrolyte, and uses, as a pos. electrode active material, a composite material of a first lithium compound represented by the general formula LixMyPO4, where 0 <x< 2,

0.8 <y< 1.2 and M contains Fe, and a second lithium compound having a potential holder than the potential of the first lithium compound

IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 19414-36-9, Iron lithium manganese phosphate ((Fe,Mn)Li(PO4))
(cathode for nonaq. electrolyte lithium ion battery)

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

RN 7550-35-8 HCAPLUS
CN Lithium bromide (LiBr) (CA INDEX NAME)

RN 19414-36-9 HCAPLUS
CN Iron lithium manganese phosphate ((Fe,Mn)Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0 - 1	7439-96-5
Li	1	7439-93-2
Fe	0 - 1	7439-89-6

IPCI H01M0004-58 [ICM,6]; C01G0049-00 [ICS,6]; C01B0025-30 [ICS,6]; C01B0025-45 [ICS,6]; C01B0025-00 [ICS,6,C*]; H01M0004-38 [ICS,6]
IPCR H01M0010-36 [I,C*]; H01M0010-40 [I,A]; C01B0025-00 [I,C*]; C01B0025-45 [I,A]; H01M0004-02 [I,C*]; H01M0004-02 [I,A]; H01M0004-36 [I,C*]; H01M0004-36 [I,A]; H01M0004-38 [I,C*]; H01M0004-38 [I,A]; H01M0004-40 [N,C*]; H01M0004-40 [N,A]; H01M0004-48 [N,C*]; H01M0004-48 [N,A]; H01M0004-52 [I,C*]; H01M0004-52 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-36 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium nonaq electrolyte cathode
IT Charcoal
(activated; cathode for nonaq. electrolyte lithium ion battery)
IT Battery cathodes
(cathode for nonaq. electrolyte lithium ion battery)
IT Carbon fibers, uses
Carbonaceous materials (technological products)
Coke
Petroleum coke
(cathode for nonaq. electrolyte lithium ion battery)
IT Carbon black, uses
(cathode for nonaq. electrolyte lithium ion battery)
IT Fluoropolymers, uses
(cathode for nonaq. electrolyte lithium ion battery)
IT Organic compounds, uses

(high mol., sintered; cathode for nonaq. electrolyte lithium ion battery)
IT Secondary batteries
(lithium; cathode for nonaq. electrolyte lithium ion battery)
IT Coke
(needle; cathode for nonaq. electrolyte lithium ion battery)
IT Coke
(pitch; cathode for nonaq. electrolyte lithium ion battery)
IT Furan resins
Phenolic resins, uses
(sintered and carbonized; cathode for nonaq. electrolyte lithium ion battery)
IT 50-21-5D, Lactic acid, ester 60-29-7, Diethyl ether, uses
64-19-7D, Acetic acid, ester, uses 75-05-8, Acetonitrile, uses
79-09-4D, Propionic acid, ester 96-47-9, 2-Methyltetrahydrofuran
96-48-0 96-49-1, Ethylene carbonate 100-66-3, Anisole, uses
105-58-8, Diethyl carbonate 107-12-0, Propionitrile 108-32-7,
Propylene carbonate 109-99-9, Thf, uses 110-71-4,
1,2-Dimethoxyethane 126-33-0, Sulfolane 409-21-2, Silicon carbide
sic, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate
623-42-7, Methyl butyrate 623-96-1, Dipropyl carbonate 629-14-1,
1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 872-36-6, Vinylene
carbonate 1072-47-5, 4-Methyl-1,3-dioxolane 1313-08-2 2550-62-1,
Lithium methanesulfonate 4437-85-8, Butylene carbonate 7439-93-2,
Lithium, uses 7440-50-8, Copper, uses 7447-41-8, Lithium
chloride, uses 7550-35-8, Lithium bromide 7782-42-5,
Graphite, uses 7791-03-9, Lithium perchlorate 9003-07-0,
Polypropylene 12007-81-7, Silicon tetraboride 12008-29-6, Silicon
hexaboride 12013-56-8, Calcium disilicide 12017-12-8, Cobalt
disilicide 12018-09-6, Chromium disilicide 12022-99-0, Iron
disilicide 12032-86-9, Manganese disilicide 12033-76-0, Silicon
nitride oxide Si2N2O 12033-89-5, Silicon nitride, uses 12034-80-9,
Niobium disilicide 12039-79-1, Tantalum disilicide 12039-83-7,
Titanium silicide TiSi2 12039-87-1, Vanadium disilicide
12039-88-2, Tungsten disilicide 12059-14-2, Nickel silicide (Ni2Si)
12136-78-6, Molybdenum disilicide 12159-07-8, Copper silicide cu5si
12190-79-3, Cobalt lithium oxide colio2 12201-89-7, Nickel
disilicide 14283-07-9, Lithium tetrafluoroborate 14485-20-2,
Lithium tetraphenylborate 15365-14-7, Iron lithium phosphate FeLiPO4
19414-36-9, Iron lithium manganese phosphate ((Fe,Mn)Li(PO4))
21324-40-3, Lithium hexafluorophosphate 22831-39-6, Magnesium
silicide (Mg2Si) 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium trifluoromethanesulfonate 35678-71-8,
Methylsulfolane 90076-65-6 113066-89-0, Cobalt lithium nickel
oxide Co0.2LiNi0.8O2 113671-38-8, Silicon oxide SiO0-2
160479-36-7, Lithium tin oxide 178958-56-0, Lithium silicon oxide
300858-61-1 339333-78-7, Zinc silicide ZnSi2 371148-86-6, Tin
oxide (SnO0-2) 371148-87-7, Lithium magnesium manganese oxide
(LiMg0.2Mn0.8O2)
(cathode for nonaq. electrolyte lithium ion battery)
IT 24937-79-9, Pvdf
(cathode for nonaq. electrolyte lithium ion battery)
IT 7440-44-0, Carbon, uses
(pyrocarbon; cathode for nonaq. electrolyte lithium ion battery)
OS.CITING REF COUNT: 9 THERE ARE 9 CAPLUS RECORDS THAT CITE THIS RECORD (12 CITINGS)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 57 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2000:774123 HCAPLUS Full-text
DOCUMENT NUMBER: 133:352634
TITLE: Electrode materials having increased surface conductivity
INVENTOR(S): Ravet, Nathalie; Besner, Simon; Simoneau, Martin; Vallee, Alain; Armand, Michel; Magnan, Jean-francois
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: Eur. Pat. Appl., 22 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1049182	A2	20001102	EP 2000-401207	20000502
EP 1049182	A3	20040211		
EP 1049182	B1	20080102		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2270771	A1	20001030	CA 1999-2270771	19990430
CA 2307119	A1	20001030	CA 2000-2307119	20000428
CA 2307119	C	20090728		
CA 2625896	A1	20001030	CA 2000-2625896	20000428
CA 2658728	A1	20001030	CA 2000-2658728	20000428
CA 2658741	A1	20001030	CA 2000-2658741	20000428
CA 2658741	C	20100928		
CA 2658748	A1	20001030	CA 2000-2658748	20000428
JP 2001015111	A	20010119	JP 2000-132779	20000501
EP 1796189	A2	20070613	EP 2007-4289	20000502
EP 1796189	A3	20070620		
EP 1796189	B1	20090325		
R: DE, FR, GB, IT				
US 20020195591	A1	20021226	US 2002-175794	20020621
US 6855273	B2	20050215		
US 20040140458	A1	20040722	US 2003-740449	20031222
US 6962666	B2	20051108		
US 20060060827	A1	20060323	US 2005-266339	20051104
US 7344659	B2	20080318		
US 20080257721	A1	20081023	US 2008-33636	20080219
US 7815819	B2	20101019		
JP 2008186807	A	20080814	JP 2008-41303	20080222

PRIORITY APPLN. INFO.:		
CA 1999-2270771	A	19990430
CA 2000-2307119	A3	20000428
US 2000-560572	B1	20000428
JP 2000-132779	A3	20000501
EP 2000-401207	A3	20000502
US 2002-175794	A3	20020621

US 2003-740449 A1 20031222

US 2005-266339 A3 20051104

ED Entered STN: 05 Nov 2000

AB Intercalated electrode materials comprising complex oxides, especially Li oxides, are prepared, suitable for redox reaction by exchange of alkali metal ions (especially Li) and electrons with an electrolyte. The complex oxide electrodes can be used in batteries, supercapacitors or electrochromic light moderators. The complex oxides have the general formula AaMmZzOoNnFf, where A is alkali metal (e.g., Li), M is ≥1 transition metal (e.g., Fe, Mn, V, Ti, Mo, Nb, Zn, W), Z is ≥1 nonmetal (e.g., P, S, Si, Se, As, Ge, B, Sn), and a,m,z,o,n,f are chosen for elec. neutrality. A conductive carbon coating is formed or deposited on the surface of the electrode material, e.g., by pyrolysis of an organic material, hydrocarbons or polymers, for increased surface conductivity

IT 304905-34-8P 304905-42-8P
(electrode materials having increased surface conductivity)

RN 304905-34-8 HCAPLUS

CN Iron lithium manganese phosphate silicate (Fe0.8Li1.2Mn0.2(PO4)0.8(SiO4)0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.2	17181-37-2
O4P	0.8	14265-44-2
Mn	0.2	7439-96-5
Li	1.2	7439-93-2
Fe	0.8	7439-89-6

RN 304905-42-8 HCAPLUS

CN Iron lithium phosphorus silicon sulfur titanium vanadium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
P	x	7723-14-0
S	x	7704-34-9
V	x	7440-62-2
Ti	x	7440-32-6
Si	x	7440-21-3
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7783-50-8, Iron fluoride FeF3
(electrode materials having increased surface conductivity)

RN 7783-50-8 HCAPLUS

CN Iron fluoride (FeF3) (CA INDEX NAME)

IPCI H01M0004-48 [I,C]; H01M0004-48 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]; H01M0004-62 [I,C]; H01M0004-62 [I,A]
IPCR H01M0006-16 [I,C*]; H01M0006-16 [I,A]; C01B0031-00 [I,C*]; C01B0031-02 [I,A]; H01G0009-00 [I,C*]; H01G0009-00 [I,A]; H01G0009-155 [I,C*]; H01G0009-155 [I,A]; H01M0004-02 [I,C*]; H01M0004-136 [I,A]; H01M0004-24 [I,C*]; H01M0004-24 [I,A]; H01M0004-36 [N,C*]; H01M0004-36 [N,A]; H01M0004-48 [I,C*]; H01M0004-48 [I,A]; H01M0004-485 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0004-62 [I,C]; H01M0004-62 [I,A]; H01M0006-18 [I,C*]; H01M0006-18 [I,A]; H01M0010-00 [N,C*]; H01M0010-052 [N,A]; H01M0010-36 [I,C*]; H01M0010-36 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72, 76
ST electrode material carbon coated increased surface cond; battery electrode carbon coated increased surface cond; supercapacitor electrode carbon coated increased surface cond ; electrochromic material carbon coated increased surface cond
IT Metallic fibers
(aluminum; electrode materials having increased surface conductivity)
IT Windows
Windows
(electrochromic; electrode materials having increased surface conductivity)
IT Battery cathodes
Capacitor electrodes
Electrochromic materials
Electrodes
Primary batteries
Secondary batteries
Thermal decomposition
(electrode materials having increased surface conductivity)
IT Oxides (inorganic), uses
Oxynitrides
Phosphates, uses
Silicates, uses
Sulfates, uses
(electrode materials having increased surface conductivity)
IT Carbon black, uses
EPDM rubber
(electrode materials having increased surface conductivity)
IT Hydrocarbons, reactions
(electrode materials having increased surface conductivity)
IT Organic compounds, reactions
(electrode materials having increased surface conductivity)
IT Polymers, reactions
(electrode materials having increased surface conductivity)
IT Polyolefins
(electrode materials having increased surface conductivity)
IT Polysaccharides, reactions
(electrode materials having increased surface conductivity)
IT Polyoxyalkylenes, uses
(electrolytes; electrode materials having increased surface conductivity)
IT Primary batteries
Secondary batteries
(lithium; electrode materials having increased surface cond .)
IT Fluorides, uses

(oxyfluorides; electrode materials having increased surface conductivity)

IT Electrolytic capacitors
(supercapacitors; electrode materials having increased surface conductivity)

IT Electrochromic devices
Electrochromic devices
(windows; electrode materials having increased surface cond.)

IT 7440-44-0P, Carbon, uses 15365-14-7P, Iron lithium phosphate (FeLiPO4) 30734-08-8P, Lithium manganese silicate Li2MnSiO4 39302-37-9P, Lithium titanium oxide 180984-63-8P, Lithium magnesium titanium oxide 252943-50-3P, Lithium vanadium phosphate silicate Li3.5V2(PO4)2.5(SiO4)0.5 304905-30-4P 304905-31-5P, Iron lithium fluoride (FeLi0.2F3) 304905-32-6P, Lithium manganese nitride oxide (Li3MnNO) 304905-33-7P 304905-34-8P 304905-35-9P, Lithium magnesium titanium oxide (Li3.5Mg0.5Ti4O12) 304905-36-0P, Iron lithium phosphorus silicon oxide 304905-37-1P 304905-38-2P, Iron lithium phosphorus fluoride oxide 304905-39-3P 304905-40-6P 304905-41-7P 304905-42-8P
(electrode materials having increased surface conductivity)

IT 1314-35-8, Tungsten oxide WO3, uses 7782-42-5, Graphite, uses 50926-11-9, Indium tin oxide 65324-39-2, Celgard 2400
(electrode materials having increased surface conductivity)

IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
(electrode materials having increased surface conductivity)

IT 78-10-4 109-72-8, Butyl lithium, uses 546-68-9 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1344-43-0, Manganese oxide MnO, uses 5931-89-5, Cobalt acetate 5965-38-8, Cobalt oxalate dihydrate 6108-17-4, Lithium acetate dihydrate 6156-78-1, Manganese acetate tetrahydrate 6556-16-7, Manganese oxalate dihydrate 7722-76-1, Ammonium dihydrogen phosphate 7783-50-8, Iron fluoride FeF3 7803-55-6, Ammonium vanadate 9003-01-4, Polyacrylic acid 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 10028-22-5, Ferric sulfate 10102-24-6, Lithium silicate Li2SiO3 10377-52-3, Lithium phosphate Li3PO4 13463-10-0, Ferric phosphate dihydrate 14567-67-0, Vivianite 16674-78-5, Magnesium acetate tetrahydrate 25656-42-2, Lithium polyacrylate 26134-62-3, Lithium nitride 145673-07-0
(electrode materials having increased surface conductivity)

IT 304905-43-9 305324-61-2
(electrode materials having increased surface conductivity)

IT 57-50-1, reactions 77-47-4, Hexachlorocyclopentadiene 98-00-0D, Furfuryl alcohol, derivs., polymers 100-42-5D, Styrene, derivs., polymers 107-13-1D, Acrylonitrile, derivs., polymers 108-05-4D, Vinyl acetate, derivs., polymers 108-95-2D, Phenol, derivs., polymers, reactions 115-07-1, 1-Propene, reactions 120-12-7, Anthracene, reactions 128-69-8D, 3,4,9,10-Perylenetetracarboxylic acid dianhydride, polymers with Jeffamine 600 198-55-0D, Perylene, derivs., polymers 630-08-0, Carbon monoxide, reactions 996-70-3, Tetrakis(dimethylamino)ethylene 1321-74-0D, Divinylbenzene, derivs., polymers 6674-22-2, DBU 9002-88-4 9002-89-5 9003-07-0, Polypropylene 9003-17-2D, Polybutadiene, derivs. 9004-34-6D, Cellulose, derivs., reactions 9004-35-7, Cellulose acetate 9005-25-8D, Starch, derivs., reactions 15133-82-1, Tetrakis(triphenylphosphine)nickel 25014-41-9, Polyacrylonitrile 51736-72-2, Polyvinylidene bromide 157889-12-8, Jeffamine ED 600-perylenetetracarboxylic acid dianhydride copolymer

(electrode materials having increased surface conductivity)
IT 75-05-8, Acetonitrile, uses 96-48-0, γ-Butyrolactone
96-49-1, Ethylene carbonate 110-71-4 616-38-6, Dimethyl carbonate
646-06-0, Dioxolane 2832-49-7, Tetraethylsulfamide 21324-40-3,
Lithium hexafluorophosphate LiPF6 25322-68-3 66950-70-7
90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(electrolytes; electrode materials having increased surface
conductivity)
IT 7429-90-5, Aluminum, uses
(foils, grills; electrode materials having increased surface
conductivity)
IT 7439-93-2, Lithium, uses
(foils; electrode materials having increased surface cond
.)
IT 7440-50-8, Copper, uses
(grills; electrode materials having increased surface cond
.)
IT 7440-02-0, Nickel, uses
(substrates; electrode materials having increased surface
conductivity)
OS.CITING REF COUNT: 96 THERE ARE 96 CAPLUS RECORDS THAT CITE THIS RECORD (118 CITINGS)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 58 OF 58 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1999:745717 HCAPLUS Full-text
DOCUMENT NUMBER: 132:38039
TITLE: Supercapacitors and batteries
AUTHOR(S): Goodenough, J. B.; Lee, Hee Y.; Manivannan, V.
CORPORATE SOURCE: Texas Materials Institute, ETC 9.102, University of Texas at Austin, Austin, TX, 78712-1063, USA
SOURCE: Materials Research Society Symposium Proceedings (1999), 548(Solid State Ionics V), 655-665
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 24 Nov 1999
AB Comparisons are made between the material requirements for supercapacitor electrodes and the cathode of a lithium-ion battery. The performances of the battery cathodes Li1+xFe2(SO4)2(PO4) and Li1+xVMoO6 are compared to those for supercapacitor electrodes operating with 5.3M H2SO4, Nafion 117, or 2M KCl aqueous solution at pH 6.7. The use of a KCl aqueous electrolyte at mild pH allows stabilization of amorphous, hydrated electrode materials such as a-MnO2.nH2O that are not stable in 5.3M H2SO4 or with Nafion 117. However, the larger K+ ion appears to reduce by a factor of three the theor. capacity attainable with H+ ions.
IT 205380-60-5D, Iron lithium phosphate sulfate
(Fe2LiPO4(SO4)2), lithium-intercalated
(materials for supercapacitor electrodes and lithium battery
cathodes)
RN 205380-60-5 HCAPLUS
CN Iron lithium phosphate sulfate (Fe2Li(PO4)(SO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	2	14808-79-8

O4P	1	14265-44-2
Li	1	7439-93-2
Fe	2	7439-89-6

IT 7447-40-7, Potassium chloride, uses
(materials for supercapacitor electrodes and lithium battery cathodes)
RN 7447-40-7 HCAPLUS
CN Potassium chloride (KCl) (CA INDEX NAME)

Cl—K

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST supercapacitor electrode lithium battery cathode
IT Capacitors
(double layer; materials for supercapacitor electrodes and lithium battery cathodes)
IT Secondary batteries
(lithium; materials for supercapacitor electrodes and lithium battery cathodes)
IT Battery cathodes
Electrodes
(materials for supercapacitor electrodes and lithium battery cathodes)
IT 12169-23-2, Thorium titanium oxide (ThTi2O6) 12299-92-2D, Lithium molybdenum vanadium oxide (LiMoVO6), lithium-intercalated 26088-58-4, Manganese dioxide hydrate 32740-79-7, Ruthenium dioxide hydrate 36058-25-0D, Iron lithium phosphate (Fe2Li3(PO4)3), lithium-intercalated 51312-22-2, Manganese potassium oxide hydrate 174015-34-0D, Iron lithium sulfate (Fe2Li(SO4)3), lithium-intercalated 205380-60-5D, Iron lithium phosphate sulfate (Fe2LiPO4(SO4)2), lithium-intercalated
(materials for supercapacitor electrodes and lithium battery cathodes)
IT 7447-40-7, Potassium chloride, uses 7664-93-9, Sulfuric acid, uses 66796-30-3, Nafion 117
(materials for supercapacitor electrodes and lithium battery cathodes)

OS.CITING REF COUNT:	8	THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)
REFERENCE COUNT:	11	THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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=>  d que l51
L3        469000 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (M(L)O(L)P)/ELS
L4          9658 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (M(L)X)/ELS(L)2/E
                 LC.SUB
L5         11919 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L3 AND LI/ELS
L6           431 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L5 AND V/ELS
L7           310 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L6 AND O4P
L8         18706 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L3 AND O4P
L9          6748 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L8 AND (V OR CR
                 OR CU OR ZN OR IN OR SN OR MO OR TI)/ELS
L10        13664 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L8 AND (V OR CR
                 OR CU OR ZN OR IN OR SN OR MO OR TI OR ZR OR HF OR NB OR
                 TA OR W OR MN OR TC OR RE OR FE OR RU OR OS OR CO OR RH OR
                 IR OR AG OR AU OR CD OR HG OR AL OR GA OR GE OR PB)/ELS
L11         2880 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L10 AND LI/ELS
L12        10784 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L10 NOT L11
L16         1152 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L11 AND FE/ELS
L17         1315 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L12 AND FE/ELS
L18           57 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L6 AND FE/ELS
L19          685 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L9 AND FE/ELS
L20           39 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L18 AND L7
L22       777192 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L4
L23           41 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L20
L24          717 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L16
L25         1989 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L17
L26           62 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L18
L27          386 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L19
L28          205 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L22 AND (L23 OR
                 L24 OR L25 OR L26 OR L27)
L30              QUE  SPE=ON  ABB=ON  PLU=ON  CATHODE# OR POSITIVE ELECTRO
                 DE# OR POSITIVEELECTRODE#
L33              QUE  SPE=ON  ABB=ON  PLU=ON  (C OR CARBON)(3A)DEPOSIT?
L44           73 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  ("HATTA, NAOKI"/AU
                  OR "INABA, TOSHIKAZU"/AU OR "UCHIYAMA, IZUMI"/AU)
L45            1 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L44 AND L28
L46           19 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L44 AND ELECTROCHE
                 M?/SC,SX
L47           19 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L45 OR L46
L48            3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L47 AND (L22 OR
                 L23 OR L24 OR L25 OR L26 OR L27)
L49            1 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L47 AND L33
L50           12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L30 AND L47
L51           12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  (L48 OR L49 OR
                 L50)


=> d l51 1-12 ibib ed abs hitind

L51  ANSWER 1 OF 12  HCAPLUS  COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER:         2005:395668  HCAPLUS  Full-text
DOCUMENT NUMBER:          142:449376
TITLE:                    Cathode material for secondary battery,
                          its manufacture, and the battery
INVENTOR(S):              Hatta, Naoki; Inaba, Toshikazu
                          ; Uchiyama, Izumi
PATENT ASSIGNEE(S):       Mitsui Engineering & Shipbuilding Co., Ltd.,
                          Japan; Research Institute of Innovative Technology
                          for the Earth
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SOURCE: PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005041327	A1	20050506	WO 2004-JP15836	20041026
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2543851	A1	20050506	CA 2004-2543851	20041026
EP 1689011	A1	20060809	EP 2004-792957	20041026
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
CN 1883067	A	20061220	CN 2004-80031725	20041026
CN 100573981	C	20091223		
KR 2006132576	A	20061221	KR 2006-7008069	20060426
HK 1095431	A1	20100625	HK 2007-100905	20070125
US 20080131777	A1	20080605	US 2008-577279	20080205
PRIORITY APPLN. INFO.:			JP 2003-365790 A	20031027
			WO 2004-JP15836 W	20041026

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 09 May 2005

AB The material comprises a LinFePO4 (n =0-1) based cathode active mass and further contains ≥1 metal element, selected from group 4-6 and group 11-14, and a halo element having content ≥0.1 mol% (vs. P). The material is manufactured by mixing a LinFePO4 raw material with a metal halide, containing the metal element(s); and compositing the metal element with the active mass by firing the mixture The battery contains the above material. IPCI H01M0004-48 [ICM,7]; H01M0004-58 [ICS,7]; H01M0004-02 [ICS,7];
C01B0025-45 [ICS,7]; C01B0025-00 [ICS,7,C*]

IPCR C01B0025-00 [I,C*]; C01B0025-45 [I,A]; H01M0004-02 [N,C*]; H01M0004-131 [N,A]; H01M0004-1315 [N,A]; H01M0004-136 [N,A]; H01M0004-13915 [N,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]; H01M0010-42 [I,C*]; H01M0010-44 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery cathode lithium iron composite phosphate manuf

IT Battery cathodes
(compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)

IT Secondary batteries
(lithium; compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)

IT 7447-39-4, Copper chloride (CuCl2), uses 7550-45-0
, Titanium chloride (TiCl4), uses 7646-78-8, Tin chloride
(SnCl4), uses 7646-85-7, Zinc chloride (ZnCl2), uses
7718-98-1, Vanadium chloride (VCl3) 7772-99-8, Tin
chloride (SnCl2), uses 10025-73-7, Chromium chloride
(CrCl3) 10241-05-1, Molybdenum chloride (MoCl5)
22519-64-8, Indium trichloride tetrahydrate
(compns. and manufacture of cathode materials containing lithium
iron composite phosphates for secondary lithium batteries)

IT 851190-38-0P, Iron lithium vanadium phosphate
(Fe0.97Li1.01V0.01(PO4)) 851190-39-1P, Chromium iron
lithium phosphate (Cr0.01FeLi1.03(PO4)) 851190-40-4P,
Chromium iron lithium phosphate (Cr0.01Fe1.02Li0.99(PO4))
851190-41-5P, Copper iron lithium phosphate
(Cu0.01Fe0.96Li(PO4)) 851190-42-6P, Iron lithium zinc
phosphate (Fe0.98Li1.04Zn0.01(PO4)) 851190-43-7P, Indium
iron lithium phosphate (In0.01Fe0.98Li1.01(PO4))
851190-44-8P, Iron lithium tin phosphate
(Fe0.99Li0.97Sn0.01(PO4)) 851190-45-9P, Iron lithium tin
phosphate (Fe1.01Li1.03Sn0.01(PO4)) 851190-46-0P, Iron
lithium molybdenum phosphate (Fe1.01Li1.01Mo0.01(PO4))
851190-47-1P, Iron lithium titanium phosphate
(Fe0.97LiTi0.01(PO4)) 851190-48-2P, Iron lithium vanadium
phosphate (Fe1.03Li1.02V0.01(PO4)) 851190-49-3P, Chromium
iron lithium phosphate (Cr0.01Fe1.02Li1.03(PO4))
851190-50-6P, Chromium iron lithium phosphate
(Cr0.01Fe0.97Li1.01(PO4)) 851190-51-7P, Copper iron
lithium phosphate (Cu0.01Fe0.97Li(PO4)) 851190-53-9P, Iron
lithium zinc phosphate (Fe1.01Li1.04Zn0.01(PO4))
851190-54-0P, Indium iron lithium phosphate
(In0.01Fe0.99Li1.02(PO4)) 851190-55-1P, Iron lithium tin
phosphate (Fe1.01Li1.05Sn0.01(PO4)) 851190-56-2P, Iron
lithium tin phosphate (Fe1.01Li1.04Sn0.01(PO4)) 851190-57-3P
, Iron lithium molybdenum phosphate (Fe1.08Li1.03Mo0.01(PO4))
851190-58-4P, Iron lithium titanium phosphate
(Fe1.04Li1.04Ti0.01(PO4))
(compns. and manufacture of cathode materials containing lithium
iron composite phosphates for secondary lithium batteries)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L51 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:904493 HCAPLUS Full-text

DOCUMENT NUMBER: 141:368446

TITLE: Manufacture of cathode materials for secondary batteries and secondary batteries

INVENTOR(S): Ratta, Naoki; Inaba, Toshikazu; Uchiyama, Izumi; Okada, Shigeto; Yamaki, Junichi

PATENT ASSIGNEE(S): Kyushu University, Japan; Mitsui Engineering and Shipbuilding Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004303496	A	20041028	JP 2003-93108	20030331
JP 4475882	B2	20100609		
PRIORITY APPLN. INFO.:			JP 2003-93108	20030331

ED Entered STN: 29 Oct 2004
AB Secondary battery cathode materials having composition formula LinMPO4 (n = 0-1; M = Fe, Co, and/or Mn) are prepared by mixing of (a) LiOH.aH2O or Li2CO3, (b) MCl2.bH2O, and (c) (NH4)cHdPO4 (a = 0-1; b = 0-6; c, d = 1, 2, but c ≠ d) for their reaction, followed by firing. Conductive carbon and/or its precursors, e.g. bitumen, may also be added. Preferably, the firing process is carried out in 2 steps, 1st at 300-450° and then at a temperature between the standard temperature and the temperature for completion of firing. Also claimed is secondary batteries including the thus manufactured LinMPO4 as cathodes. The cathode materials can be manufactured from low-cost raw materials.
IPCI H01M0004-505 [I,A]; H01M0004-525 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR C01B0025-00 [I,C*]; C01B0025-45 [I,A]; H01M0004-02 [I,A]; H01M0004-02 [I,C*]; H01M0004-58 [I,A]; H01M0004-58 [I,C*]; H01M0010-36 [I,C*]; H01M0010-40 [I,A]; H01M0004-50 [I,C]; H01M0004-505 [I,A]; H01M0004-52 [I,C]; H01M0004-525 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium mixed phosphate battery cathode; iron lithium phosphate secondary battery cathode
IT Coal tar pitch
(conductive carbon precursor; low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)
IT Bitumens
(conductive carbon precursor; low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)
IT Battery cathodes
Secondary batteries
(low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)
IT Carbohydrates, uses
(low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)
IT 7440-44-0P, Carbon, uses
(conductive; low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 780769-31-5P, Cobalt lithium phosphate (CoLi0-1(PO4)) 780769-32-6P, Lithium manganese phosphate (Li0-1Mn(PO4))
(low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)
IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 7646-79-9, Cobalt dichloride, reactions 7758-94-3, Iron dichloride 7773-01-5, Manganese dichloride 10124-31-9, Ammonium phosphate
(low-cost and stable manufacture of lithium mixed phosphate secondary battery cathode materials)

L51 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:650267 HCAPLUS Full-text
DOCUMENT NUMBER: 141:193000
TITLE: Positive electrode material for secondary battery, process for producing the

same and secondary battery
INVENTOR(S): Hatta, Naoki; Inaba, Toshikazu ; Uchiyama, Izumi
PATENT ASSIGNEE(S): Mitsui Engineering & Shipbuilding Co., Ltd., Japan; Research Institute of Innovative Technology for the Earth
SOURCE: PCT Int. Appl., 74 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004068620	A1	20040812	WO 2004-JP919	20040130
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
CA 2514528	A1	20040812	CA 2004-2514528	20040130
EP 1603177	A1	20051207	EP 2004-706803	20040130
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1833328	A	20060913	CN 2004-80003336	20040130
US 20080138709	A1	20080612	US 2008-543864	20080205
PRIORITY APPLN. INFO.:			JP 2003-24454 A	20030131
			WO 2004-JP919 W	20040130

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 12 Aug 2004
AB A pos. electrode material for secondary battery comprises as a main component a pos. electrode active substance of the general formula LinFePO4 (wherein n is a number of 0 to 1) and Mo. The Mo is complexed with the pos. electrode active substance LinFePO4. In a preferred form of the pos. electrode material, the pos. electrode material on its surface has deposits of conductive carbon. The method for preparation of anode active material as well as batteries prepared with the anode active materials are also disclosed.
IPCI H01M0004-58 [ICM,7]; H01M0010-40 [ICS,7]; H01M0010-36 [ICS,7,C*]
IPCR H01M0004-02 [N,C*]; H01M0004-136 [N,A]; H01M0004-36 [N,C*]; H01M0004-36 [N,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-0525 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 737008-16-1P, Iron lithium molybdenum oxide phosphate (Fe1.02Li0.98Mo0.02O0.73(PO4)) 737008-17-2P, Iron lithium molybdenum oxide phosphate (Fe1.08Li1.03Mo0.01O0.44(PO4)) 737008-18-3P 737008-19-4P 737008-20-7P 737008-21-8P
(secondary battery anode-active substance)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L51 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:355270 HCAPLUS Full-text
DOCUMENT NUMBER: 140:360343
TITLE: Manufacture of cathode active mass for lithium battery and the battery

INVENTOR(S): Okada, Shigeto; Yamaki, Jun-ichi; Chen, Yike; Yamamoto, Takafumi; Hatta, Naoki
PATENT ASSIGNEE(S): Japan as Represented by President of the University of Kyusyu, Japan; Mitsui Engineering & Shipbuilding Co., Ltd.
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004036672	A1	20040429	WO 2003-JP13315	20031017
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2502596	A1	20040429	CA 2003-2502596	20031017
AU 2003301468	A1	20040504	AU 2003-301468	20031017
EP 1553648	A1	20050713	EP 2003-756676	20031017
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1706056	A	20051207	CN 2003-80101663	20031017
CN 100369302	C	20080213		
JP 4403244	B2	20100127	JP 2004-544984	20031017
US 20060127750	A1	20060615	US 2005-531191	20051212
US 7498098	B2	20090303		
HK 1080609	A1	20081224	HK 2006-100328	20060109
PRIORITY APPLN. INFO.:			JP 2002-303932 A	20021018
			WO 2003-JP13315 W	20031017

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 30 Apr 2004

AB The cathode active mass, FePO4 is prepared by dissolving Fe in a solution containing a PO43- releasing compound and sintering the reaction product. The compound is preferably selected from H3PO4, P2O5, and NH4H2PO4, and the active mass may be mixed with a conductive carbonaceous material and ground.

IPCI H01M0004-58 [ICM,7]

IPCR H01M0004-02 [N,C*]; H01M0004-02 [N,A]; H01M0004-04 [I,C*]; H01M0004-04 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0004-62 [I,C*]; H01M0004-62 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery cathode iron phosphate manuf

IT Battery cathodes
(manufacture of iron phosphate cathode active mass for lithium battery)

IT Carbon black, uses

(manufacture of iron phosphate cathode active mass for lithium battery)

IT 1314-56-3, Phosphorus pentoxide, processes 7439-89-6, Iron, processes 7664-38-2, Phosphoric acid, processes 7722-76-1, Ammonium dihydrogen phosphate
(manufacture of iron phosphate cathode active mass for lithium battery)

IT 10045-86-0P, Ferric phosphate
(manufacture of iron phosphate cathode active mass for lithium battery)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L51 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:355269 HCAPLUS Full-text
DOCUMENT NUMBER: 140:360342
TITLE: Manufacture of cathode active mass for secondary battery and the battery
INVENTOR(S): Okada, Shigeto; Yamaki, Jun-ichi; Natta, Naoki; Uchiyama, Izumi; Inaba, Toshikazu
PATENT ASSIGNEE(S): Japan as Represented by President of the University of Kyusyu, Japan; Mitsui Engineering & Shipbuilding Co., Ltd.
SOURCE: PCT Int. Appl., 52 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004036671	A1	20040429	WO 2003-JP13314	20031017
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2502592	A1	20040429	CA 2003-2502592	20031017
AU 2003301467	A1	20040504	AU 2003-301467	20031017
EP 1553647	A1	20050713	EP 2003-756675	20031017
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1706057	A	20051207	CN 2003-80101674	20031017
CN 100359726	C	20080102		
JP 4448976	B2	20100414	JP 2004-544983	20031017
US 20060147365	A1	20060706	US 2005-531196	20051212
US 7491468	B2	20090217		
HK 1080610	A1	20081031	HK 2006-100329	20060109

PRIORITY APPLN. INFO.: JP 2002-303931 A 20021018

WO 2003-JP13314 W 20031017

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 30 Apr 2004
AB The cathode active mass, LiFePO4 os prepared by dissolving iron in a solution, containing a phosphate ion releasing compound and H2O; adding Li2CO3, LiOH, or their hydrated to the solution; and sintering the reaction product. Preferably the sintering is carried out by heating from .apprx.20° to 300-450° in a 1st stage, adding a substance that will pyrolyze to produce a conductive carbonaceous material, e.g. bitumen or sugar, to the heat treated material, and heating from .apprx.20° to a final temperature in a 2nd stage. IPCI H01M0004-58 [ICM,7]; C01B0025-45 [ICS,7]; C01B0025-00 [ICS,7,C*]
IPCR C01B0025-00 [I,C*]; C01B0025-37 [I,A]; C01B0025-45 [I,A]; H01M0004-02 [I,C*]; H01M0004-136 [I,A]; H01M0004-1397 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-052 [I,A]; H01M0010-0525 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery iron lithium phosphate cathode active mass manuf sugar; bitumen battery iron lithium phosphate cathode active mass manuf
IT Battery cathodes
Coal tar pitch
(manufacture of cathode active mass containing pyrolytic conductive carbonaceous materials for secondary lithium batteries)
IT Carbonaceous materials (technological products)
(manufacture of cathode active mass containing pyrolytic conductive carbonaceous materials for secondary lithium batteries)
IT 1310-65-2, Lithium hydroxide 7439-89-6, Iron, processes 7664-38-2, Phosphoric acid, processes
(manufacture of cathode active mass containing pyrolytic conductive carbonaceous materials for secondary lithium batteries)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(manufacture of cathode active mass containing pyrolytic conductive carbonaceous materials for secondary lithium batteries)
IT 144-62-7, Oxalic acid, uses 1314-56-3, Phosphorus pentoxide, uses 7647-01-0, Hydrochloric acid, uses
(manufacture of cathode active mass containing pyrolytic conductive carbonaceous materials for secondary lithium batteries)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L51 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:154674 HCAPLUS Full-text
DOCUMENT NUMBER: 140:184737
TITLE: Manufacture of cathode active mass for secondary battery and the battery
INVENTOR(S): Natta, Naoki; Okada, Shigeto; Yamaki, Junichi
PATENT ASSIGNEE(S): Mitsui Engineering and Shipbuilding Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004063386	A	20040226	JP 2002-222870	20020731
JP 4297406	B2	20090715		
PRIORITY APPLN. INFO.:			JP 2002-222870	20020731

ED Entered STN: 26 Feb 2004
AB The cathode active mass is prepared by firing of raw materials, in a 1st step heating from .apprx.20° to 300-450° and a 2nd step heating from .apprx.20° to the final firing temperature, where a conductive carbon precursor is added to the raw material after the 1st step. The battery uses LiqFePO4 (q = 0-1), LiqCoPO4, or LiqMnPO4 cathode active mass prepare by the above method.
IPCI H01M0004-58 [I,A]; H01M0004-36 [I,A]; C01B0025-45 [I,A]; C01B0025-00 [I,C*]
IPCR C01B0025-00 [I,C*]; C01B0025-45 [I,A]; H01M0004-02 [I,A]; H01M0004-02 [I,C*]; H01M0004-04 [I,A]; H01M0004-04 [I,C*]; H01M0004-58 [I,A]; H01M0004-58 [I,C*]; H01M0004-62 [I,A]; H01M0004-62 [I,C*]; H01M0010-36 [I,C*]; H01M0010-40 [I,A]; H01M0004-36 [I,C]; H01M0004-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium battery phosphate cathode active mass manuf; carbon conductor formation secondary lithium battery cathode manuf
IT Battery cathodes
Pitch
(addition of carbon conductor precursor in 2-step firing of cathode active mass for secondary lithium batteries)
IT Carbon black
(addition of carbon conductor precursor in 2-step firing of cathode active mass for secondary lithium batteries)
IT 516-03-0, Iron oxalate 1310-65-2, Lithium hydroxide 7783-28-0, Diammonium phosphate 9004-53-9, Dextrin 10377-52-3, Lithium phosphate 14940-41-1, Ferrous phosphate
(addition of carbon conductor precursor in 2-step firing of cathode active mass for secondary lithium batteries)
IT 7440-44-0P, Carbon, uses 13824-63-0P, Cobalt lithium phosphate 13826-59-0P, Lithium manganese phosphate 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(addition of carbon conductor precursor in 2-step firing of cathode active mass for secondary lithium batteries)

L51 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:412142 HCAPLUS Full-text
DOCUMENT NUMBER: 138:404326
TITLE: Cathode material containing corrosion-resistant metal and secondary nonaqueous-electrolyte battery using it
INVENTOR(S): Okada, Shigeto; Yamaki, Junichi; Natta, Naoki
PATENT ASSIGNEE(S): Kyushu University, Japan; Mitsui Engineering and Shipbuilding Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 2003157850	A	20030530	JP 2001-357012	20011122
PRIORITY APPLN. INFO.:			JP 2001-357012	20011122

ED Entered STN: 30 May 2003
AB The claimed cathode material comprises a metal showing oxidation corrosion resistance in a secondary nonaq.-electrolyte battery, where the metal is mixed with active mass or deposited on an active mass granule surface. The cathode active mass may contain M(1)aM(2)xAyOz [M(1) = Li or Na; M(2) = Fe(II), Co(II), Mn(II), Ni(II), V(II,), or Cu(II); A = P or S; a = 0-3; x = 1-2; y = 1-3; z = 4-12]. The metal may be selected from Ag, Au, Pt-group metals, Ti, Al, Sb, Nb, Ta, Sn, stainless steel, Hastelloy, Incoloy, Inconel, or its composite. The cathode material has high surface conductivity and the resulting battery provides long cycle life and high discharge capacity.
IPCI H01M0004-62 [ICM,7]; C01B0025-45 [ICS,7]; C01B0025-00 [ICS,7,C*]; H01M0004-02 [ICS,7]; H01M0004-58 [ICS,7]; H01M0010-40 [ICS,7]; H01M0010-36 [ICS,7,C*]
IPCR C01B0025-00 [I,C*]; C01B0025-45 [I,A]; H01M0004-02 [I,C*]; H01M0004-02 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0004-62 [I,C*]; H01M0004-62 [I,A]; H01M0010-36 [I,C*]; H01M0010-40 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 55, 56
ST cathode oxidn corrosion resistant metal secondary nonaq battery
IT Battery cathodes
(cathode containing oxidation corrosion-resistant metal for secondary nonaq.-electrolyte battery)
IT Platinum-group metals
(cathode containing oxidation corrosion-resistant metal for secondary nonaq.-electrolyte battery)
IT Secondary batteries
(lithium; cathode containing oxidation corrosion-resistant metal for secondary nonaq.-electrolyte battery)
IT 15365-14-7, Iron lithium phosphate (FeLiPO4)
(cathode containing oxidation corrosion-resistant metal for secondary nonaq.-electrolyte battery)
IT 7429-90-5, Aluminum, uses 7440-03-1, Niobium, uses 7440-22-4, Silver, uses 7440-25-7, Tantalum, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses 7440-57-5, Gold, uses 11121-96-3 12597-68-1, Stainless steel, uses 12606-02-9, Inconel 37286-21-8, Hastelloy
(cathode containing oxidation corrosion-resistant metal for secondary nonaq.-electrolyte battery)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L51 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:412139 HCAPLUS Full-text
DOCUMENT NUMBER: 138:404324
TITLE: Manufacture of cathode material containing metal phosphate and secondary battery using it
INVENTOR(S): Okada, Shigeto; Yamaki, Junichi; Katta, Naoki
PATENT ASSIGNEE(S): Kyushu University, Japan; Mitsui Engineering and Shipbuilding Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003157845	A	20030530	JP 2001-357009	20011122
JP 4120860	B2	20080716		
PRIORITY APPLN. INFO.:			JP 2001-357009	20011122

ED Entered STN: 30 May 2003
AB The cathode material is manufactured by reacting ≥1 compound containing Fe, Co, Mn, Ni, Cu, and/or V with ≥1 compound containing Li in H3PO4 or a H3PO4 solution and then firing at predetd. temperature The resulting cathode material has high uniformity and a secondary battery using it provides high voltage efficiency and capacity.
IPCI H01M0004-58 [I,A]
IPCR H01M0010-36 [I,C*]; H01M0010-40 [I,A]; H01M0004-02 [I,C*]; H01M0004-02 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium iron phosphate manuf cathode secondary battery
IT Secondary batteries
(lithium; manufacture of cathode material containing lithium metal phosphate for secondary battery)
IT Battery cathodes
Firing (heat treating)
(manufacture of cathode material containing lithium metal phosphate for secondary battery)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(manufacture of cathode material containing lithium metal phosphate for secondary battery)
IT 546-89-4, Lithium acetate 3094-87-9, Ferrous acetate 7664-38-2, Phosphoric acid, reactions
(manufacture of cathode material containing lithium metal phosphate for secondary battery)

L51 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:118176 HCAPLUS Full-text
DOCUMENT NUMBER: 138:156303
TITLE: Manufacture of cathode material for secondary battery and the battery
INVENTOR(S): Okada, Shigeto; Yamaki, Junichi; Natta, Naoki
PATENT ASSIGNEE(S): Mitsui Engineering and Shipbuilding Co., Ltd., Japan
SOURCE: PCT Int. Appl., 63 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003012899	A1	20030213	WO 2002-JP7779	20020731
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,				

NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,
BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU,
MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG

CA 2456056	A1	20030213	CA 2002-2456056		20020731
AU 2002323981	A1	20030217	AU 2002-323981		20020731
EP 1414087	A1	20040428	EP 2002-755707		20020731
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK					
CN 1647297	A	20050727	CN 2002-815075		20020731
CN 1322605	C	20070620			
JP 4297429	B2	20090715	JP 2003-517968		20020731
KR 941549	B1	20100210	KR 2004-7001246		20020731
US 20040241546	A1	20041202	US 2004-485671		20040130
US 7815888	B2	20101019			
HK 1075329	A1	20080206	HK 2005-107702		20050902
PRIORITY APPLN. INFO.:			JP 2001-231538	A	20010731
			WO 2002-JP7779	W	20020731

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 14 Feb 2003
AB The material is prepared by firing raw materials added with ≥1 kind of substance selected from H, H2O and steam, and a conductive carbon and/or a substance capable of producing a conductive carbon by thermolysis. The battery using the above cathode has improved voltage efficiency and effective battery capacity. IPCI H01M0004-02 [ICM,7]; H01M0004-04 [ICS,7]; H01M0004-58 [ICS,7]; H01M0010-40 [ICS,7]; H01M0010-36 [ICS,7,C*]; C01B0031-02 [ICS,7]; C01B0031-00 [ICS,7,C*]
IPCR C01B0031-00 [I,C*]; C01B0031-02 [I,A]; C01D0001-00 [I,C*]; C01D0001-02 [I,A]; H01M0004-02 [I,C*]; H01M0004-133 [N,A]; H01M0004-136 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*]; H01M0010-0525 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary battery cathode manuf; cathode manuf
firing raw material conductive carbon hydrogen steam
IT Carbon black, uses
Coal, uses
(manufacture of cathodes by firing raw materials with conductive carbons in H or steam atmospheric for secondary batteries)
IT 1333-74-0, Hydrogen, processes 7440-37-1, Argon, processes
(manufacture of cathodes by firing raw materials with conductive carbons in H or steam atmospheric for secondary batteries)
IT 15365-14-7, Iron lithium phosphate (FeLi(PO4))
(manufacture of cathodes by firing raw materials with conductive carbons in H or steam atmospheric for secondary batteries)
IT 9004-53-9, Dextrin 108137-62-8, MCP-200
(manufacture of cathodes by firing raw materials with conductive carbons in H or steam atmospheric for secondary batteries)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L51 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:116810 HCAPLUS Full-text

DOCUMENT NUMBER: 138:173310
TITLE: Manufacture of positive electrode for secondary battery
INVENTOR(S): Hatta, Naoki; Okada, Shigeto; Yamaki, Junichi
PATENT ASSIGNEE(S): Mitsui Engineering and Shipbuilding Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003045430	A	20030214	JP 2001-231533	20010731
PRIORITY APPLN. INFO.:			JP 2001-231533	20010731

ED Entered STN: 14 Feb 2003
AB A pos. electrode for secondary battery is manufactured by sintering with the addition of grain growth inhibitor. The inhibitor is H, a substance giving off H when heated, water or water vapor, and/or a substance giving off water or water vapor when heated. The substance giving off water or water vapor is ammonia, urea, ammonium salt, polynuclear aromatic compound, and/or organic compound containing amino base. The material for the pos. electrode, containing alkaline metal, transition metal, and O, is sintered in the absence of O gas. IPCI H01M0004-58 [ICM,7]; H01M0004-02 [ICS,7]; H01M0010-40 [ICS,7]; H01M0010-36 [ICS,7,C*]
IPCR H01M0010-36 [I,C*]; H01M0010-40 [I,A]; H01M0004-02 [I,C*]; H01M0004-02 [I,A]; H01M0004-58 [I,C*]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST pos electrode secondary battery sintering grain size
IT Organic compounds, uses
(containing amino base, grain growth inhibitor; manufacture of pos. electrode for secondary battery)
IT Sintering
(for manufacture of pos. electrode for secondary battery)
IT Quaternary ammonium compounds, uses
(grain growth inhibitor; manufacture of pos. electrode for secondary battery)
IT Battery electrodes
Secondary batteries
(manufacture of pos. electrode for secondary battery)
IT Grain size
(of pos. electrode for secondary battery)
IT Aromatic compounds
(polynuclear, grain growth inhibitor; manufacture of pos. electrode for secondary battery)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(for manufacture of pos. electrode for secondary battery)
IT 57-13-6, Urea, uses 1333-74-0, Hydrogen, uses 7664-41-7, Ammonia, uses 7732-18-5, Water, uses
(grain growth inhibitor; manufacture of pos. electrode for secondary battery)

L51 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1989:442863 HCAPLUS Full-text
DOCUMENT NUMBER: 111:42863
ORIGINAL REFERENCE NO.: 111:7249a,7252a
TITLE: Fuel cell for rebalancing of secondary redox-flow battery
INVENTOR(S): Hatta, Naoki
PATENT ASSIGNEE(S): Mitsui Engineering and Shipbuilding Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01012466	A	19890117	JP 1987-168450	19870706
JP 08021415	B	19960304		
PRIORITY APPLN. INFO.:			JP 1987-168450	19870706

ED Entered STN: 05 Aug 1989
AB The cell has a H anode formed by coating an anode catalyst on 1 side of an ion-exchanger membrane, a H-diffusion layer next to the anode and the ion-exchanger membrane, and a cathode chamber on the opposite side of the membrane; with H generated from the redox-flow battery and an active mass supplied to the anode and the cathode resp., and separated by the membrane. Thus, a Nafion 117 membrane was coated with Pt on 1 side to form a H anode, and a graphite fabric was used as a H-diffusion layer. A rebalancing fuel cell of this structure had lower resistance and longer lifetime than a cell using a Pt-loaded porous C for the anode. IPCI H01M0008-04 [ICM,4]; H01M0008-18 [ICS,4]
IPCR H01M0008-04 [I,C*]; H01M0008-04 [I,A]; H01M0008-18 [I,C*]; H01M0008-18 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

L51 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1988:613598 HCAPLUS Full-text
DOCUMENT NUMBER: 109:213598
ORIGINAL REFERENCE NO.: 109:35325a,35328a
TITLE: Electrolyte supply in redox-flow batteries
INVENTOR(S): Hatta, Naoki
PATENT ASSIGNEE(S): Mitsui Engineering and Shipbuilding Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63148561	A	19880621	JP 1986-294449	19861210
PRIORITY APPLN. INFO.:			JP 1986-294449	19861210

ED Entered STN: 10 Dec 1988
AB In the operation of a redox-flow battery having a cathode and an anode

chamber separated by a separator, the catholyte and the anolyte are supplied to their resp. battery chambers countercurrently. Preferably, the anolyte is flowing downwardly and the catholyte upwardly. The p.d. between the catholyte and the anolyte is kept constant along the battery height, and the energy efficiency of the battery is improved.

IPCI H01M0008-04 [ICM,4]; H01M0008-18 [ICS,4]

IPCR H01M0008-04 [I,C*]; H01M0008-04 [I,A]; H01M0008-18 [I,C*]; H01M0008-18 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

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=> d his nofile

     (FILE 'HOME' ENTERED AT 07:21:46 ON 24 JAN 2011)

     FILE 'HCAPLUS' ENTERED AT 07:22:00 ON 24 JAN 2011
L1             1 SEA SPE=ON  ABB=ON  PLU=ON  US20080131777/PN
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 07:22:15 ON 24 JAN 2011
L2            29 SEA SPE=ON  ABB=ON  PLU=ON  (10025-73-7/BI OR 10241-05-1/BI
                  OR 22519-64-8/BI OR 7447-39-4/BI OR 7550-45-0/BI OR
                 7646-78-8/BI OR 7646-85-7/BI OR 7718-98-1/BI OR 7772-99-8/B
                 I OR 851190-38-0/BI OR 851190-39-1/BI OR 851190-40-4/BI OR
                 851190-41-5/BI OR 851190-42-6/BI OR 851190-43-7/BI OR
                 851190-44-8/BI OR 851190-45-9/BI OR 851190-46-0/BI OR
                 851190-47-1/BI OR 851190-48-2/BI OR 851190-49-3/BI OR
                 851190-50-6/BI OR 851190-51-7/BI OR 851190-53-9/BI OR
                 851190-54-0/BI OR 851190-55-1/BI OR 851190-56-2/BI OR
                 851190-57-3/BI OR 851190-58-4/BI)
L3        469000 SEA SPE=ON  ABB=ON  PLU=ON  (M(L)O(L)P)/ELS
L4          9658 SEA SPE=ON  ABB=ON  PLU=ON  (M(L)X)/ELS(L)2/ELC.SUB
L5         11919 SEA SPE=ON  ABB=ON  PLU=ON  L3 AND LI/ELS
L6           431 SEA SPE=ON  ABB=ON  PLU=ON  L5 AND V/ELS
L7           310 SEA SPE=ON  ABB=ON  PLU=ON  L6 AND O4P
L8         18706 SEA SPE=ON  ABB=ON  PLU=ON  L3 AND O4P
L9          6748 SEA SPE=ON  ABB=ON  PLU=ON  L8 AND (V OR CR OR CU OR ZN OR
                 IN OR SN OR MO OR TI)/ELS
L10        13664 SEA SPE=ON  ABB=ON  PLU=ON  L8 AND (V OR CR OR CU OR ZN OR
                 IN OR SN OR MO OR TI OR ZR OR HF OR NB OR TA OR W OR MN OR
                 TC OR RE OR FE OR RU OR OS OR CO OR RH OR IR OR AG OR AU
                 OR CD OR HG OR AL OR GA OR GE OR PB)/ELS
L11         2880 SEA SPE=ON  ABB=ON  PLU=ON  L10 AND LI/ELS
L12        10784 SEA SPE=ON  ABB=ON  PLU=ON  L10 NOT L11
L13         1615 SEA SPE=ON  ABB=ON  PLU=ON  L3 AND (LI(L)FE)/ELS
L14         1152 SEA SPE=ON  ABB=ON  PLU=ON  L13 AND O4P
L15           20 SEA SPE=ON  ABB=ON  PLU=ON  L14 AND L2
L16         1152 SEA SPE=ON  ABB=ON  PLU=ON  L11 AND FE/ELS
L17         1315 SEA SPE=ON  ABB=ON  PLU=ON  L12 AND FE/ELS
L18           57 SEA SPE=ON  ABB=ON  PLU=ON  L6 AND FE/ELS
L19          685 SEA SPE=ON  ABB=ON  PLU=ON  L9 AND FE/ELS
L20           39 SEA SPE=ON  ABB=ON  PLU=ON  L18 AND L7
L21            2 SEA SPE=ON  ABB=ON  PLU=ON  L15 AND V/ELS

     FILE 'HCAPLUS' ENTERED AT 08:45:36 ON 24 JAN 2011
L22       777192 SEA SPE=ON  ABB=ON  PLU=ON  L4
L23           41 SEA SPE=ON  ABB=ON  PLU=ON  L20
L24          717 SEA SPE=ON  ABB=ON  PLU=ON  L16
L25         1989 SEA SPE=ON  ABB=ON  PLU=ON  L17
L26           62 SEA SPE=ON  ABB=ON  PLU=ON  L18
L27          386 SEA SPE=ON  ABB=ON  PLU=ON  L19
L28          205 SEA SPE=ON  ABB=ON  PLU=ON  L22 AND (L23 OR L24 OR L25 OR
                 L26 OR L27)
L29            1 SEA SPE=ON  ABB=ON  PLU=ON  L28 AND L1
L30              QUE SPE=ON  ABB=ON  PLU=ON  CATHODE# OR POSITIVE ELECTRODE#
                  OR POSITIVEELECTRODE#
L31           59 SEA SPE=ON  ABB=ON  PLU=ON  L28 AND L30
L32           28 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND PROC/RL
L33              QUE SPE=ON  ABB=ON  PLU=ON  (C OR CARBON)(3A)DEPOSIT?
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L34           0 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND L33
L35           3 SEA SPE=ON  ABB=ON  PLU=ON  L23 AND L22

     FILE 'REGISTRY' ENTERED AT 08:52:46 ON 24 JAN 2011
L36        2467 SEA SPE=ON  ABB=ON  PLU=ON  L8 AND FE/ELS
L37        1152 SEA SPE=ON  ABB=ON  PLU=ON  L36 AND LI/ELS
L38        1315 SEA SPE=ON  ABB=ON  PLU=ON  L36 NOT L37

     FILE 'HCAPLUS' ENTERED AT 08:54:12 ON 24 JAN 2011
L39         717 SEA SPE=ON  ABB=ON  PLU=ON  L37
L40        1989 SEA SPE=ON  ABB=ON  PLU=ON  L38
L41         204 SEA SPE=ON  ABB=ON  PLU=ON  L22 AND (L39 OR L40)
L42           0 SEA SPE=ON  ABB=ON  PLU=ON  L41 NOT L28
L43          59 SEA SPE=ON  ABB=ON  PLU=ON  L31 OR L32 OR L34 OR L35
                SEL L1 AU 1-
L44          73 SEA SPE=ON  ABB=ON  PLU=ON  ("HATTA, NAOKI"/AU OR "INABA,
                TOSHIKAZU"/AU OR "UCHIYAMA, IZUMI"/AU)
L45           1 SEA SPE=ON  ABB=ON  PLU=ON  L44 AND L28
L46          19 SEA SPE=ON  ABB=ON  PLU=ON  L44 AND ELECTROCHEM?/SC,SX
L47          19 SEA SPE=ON  ABB=ON  PLU=ON  L45 OR L46
L48           3 SEA SPE=ON  ABB=ON  PLU=ON  L47 AND (L22 OR L23 OR L24 OR
                L25 OR L26 OR L27)
L49           1 SEA SPE=ON  ABB=ON  PLU=ON  L47 AND L33
L50          12 SEA SPE=ON  ABB=ON  PLU=ON  L30 AND L47
L51          12 SEA SPE=ON  ABB=ON  PLU=ON  (L48 OR L49 OR L50)
L52          58 SEA SPE=ON  ABB=ON  PLU=ON  L43 NOT L51
L53          21 SEA SPE=ON  ABB=ON  PLU=ON  L52 AND CONDUCT?
L54          58 SEA SPE=ON  ABB=ON  PLU=ON  L52 OR L53
                SEL HIT RN 1-
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